The Oil and Gas Journal

PRODUCING REFINING ENGINEERING MARKETING

VOL. 28. NO. 51. TULSA, OKLAHOMA, MAY 8, 1930

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- ☐ Equipment

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Title _____
Company _____
Address _____
City _____
State _____

Refinery Section Starts on Page 178

May Opens With Higher Production

Highest daily average estimated total production in 1929, week ended Aug. 24, 2,975,435 bbls. Lowest in 1929, Dec. 27, 2,595,320 bbls.

Texas Far Above Average Suggested by Committee on Economics. California Output Up, Oklahoma Down

Highest daily average estimated light oil production in 1929, week ended Sept. 14, 2,534,524 bbls. Lowest in 1929, Apr. 13, 2,142,036 bbls.

By James McIntyre

The steady increase in the production of crude oil in the United States which began in the first week in April, continued through the past week, an increase of 9,310 barrels per day over the previous week's record being shown in the reports from the various producing divisions.

The largest increase was in the Texas Panhandle division which shows a gain of 7,904 barrels per day. West Texas increased 3,324 barrels per day; Arkansas, 135 barrels; East Central Texas, 1,700 barrels; Eastern fields, 1,000 barrels; Rocky Mountain fields, 3,439 barrels; and California, 3,000 barrels. Partly offsetting these increases, Oklahoma shows a decline of 3,230 barrels; North Louisiana, 1,105 barrels; North Central Texas, 1,950 barrels; Kansas, 120 barrels; Gulf Coast, 3,164 barrels; and Southwest Texas, 1,623 barrels.

Compared with the allotted daily average production from April to December inclusive, suggested by the Committee on Economics of the Federal Oil Conservation Board, the country was overproducing last week at the rate of 94,030 barrels per day, with Texas the worst offender with an overproduction of 86,277 barrels a day. If we are to accept the Committee on Economics' estimate of domestic production requirements, this country was overproducing at the rate of nearly 26,000,000 barrels in nine months, or 2,888,889 barrels per month.

The production situation and the market price of crude oil is entirely in the hands of the production division of the industry. It cannot hope to obtain the true value of a barrel of crude if overproduction persists. The situation at the end of March was most favorable, but producers are allowing it to get away from them.

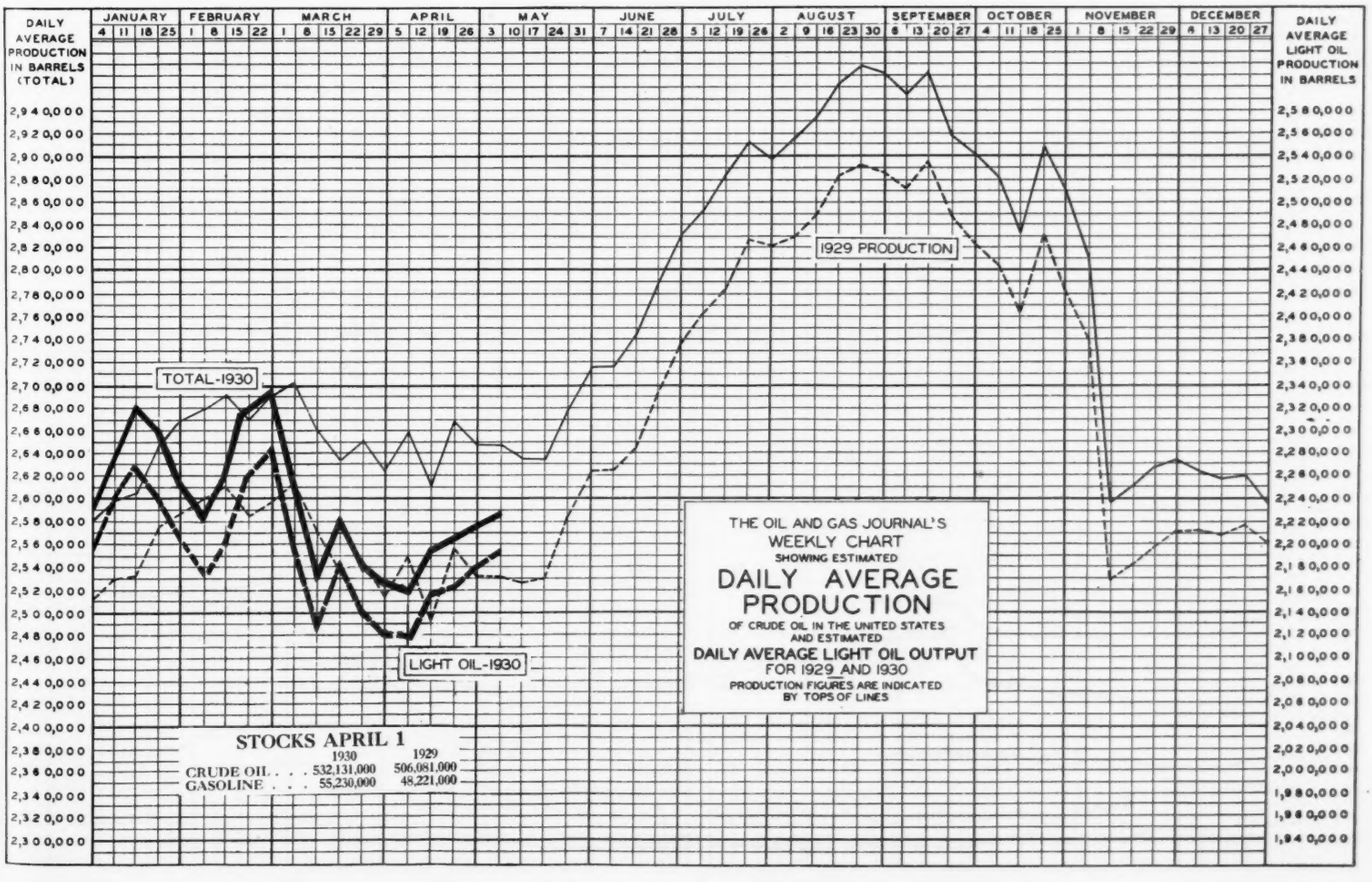
Oil is still being run from storage in Oklahoma and Kansas, but in less quantity than in mid-April. Crude runs to stills increased as a whole in the week ending April 26, over the previous week but the greatest degree of increase was on the Atlantic Coast, while the territory served by Mid-Continent pipe lines decreased slightly. Mid-Continent refiners are not running as much crude to stills as they were a year ago and appear to be doing their part to stabilize supply and demand.

PRODUCTION IN THE UNITED STATES

Estimated daily average production of light and heavy gravity oil in the United States for week ended May 3, 1930, and a comparison with the previous week follows:

	May 3		April 26	
	Light	Heavy	Light	Heavy
Oklahoma—				
Oklahoma City	116,420	.....	109,140	.....
St. Louis-Pearson	37,220	.....	37,420	.....
Seminole	211,090	.....	219,085	.....
Northern miscellaneous	237,090	.....	239,380	.....
Southern fields	56,150	.....	56,175	.....
Total Oklahoma	657,970	.....	661,200	.....
West Texas—				
Hendricks	79,191	.....	79,440	.....
Yates	120,126	.....	117,510	.....
Remainder	119,622	.....	118,665	.....
Total West Texas	318,939	.....	315,615	.....
North Louisiana	35,685	5,200	36,775	5,215
Arkansas	17,815	40,245	17,635	40,290
North Central Texas	138,574	.....	140,524	.....
Texas Panhandle	103,379	.....	95,475	.....
East Central Texas	37,197	.....	35,497	.....
Kansas	125,130	.....	125,250	.....
Total Mid-Continent area	1,434,689	45,445	1,427,971	45,505
Gulf Coast	.....	198,336	.....	201,500
Southwest Texas	.....	62,436	.....	64,059
Eastern	140,000	.....	139,000	.....
Rocky Mountain area	77,624	.....	74,185	.....
California—				
Santa Fe Springs	132,500	.....	131,000	.....
Long Beach	99,000	.....	98,750	.....
Huntington Beach	28,500	.....	28,500	.....
Elwood	47,750	.....	48,000	.....
Ventura Avenue	48,000	.....	46,000	.....
Seal Beach	23,750	.....	23,750	.....
Remainder of State	165,000	86,000	165,000	86,500
Total California	541,500	86,000	541,000	86,500
Total United States	2 196,813	392,217	2,182,156	397,564
Grand total	2,589,030		2,579,720	

→ **Total Increase 9,310 Bbls.; Light Oil Increase 14,657 Bbls.** ←



Exporters Place May Gasoline Orders

Purchases of High Gravity Grades in Mid-Continent Total Approximately 10,000,000 Gallons. Few Changes in Domestic Market

By C. O. Willson

The placing of export purchases for 9,000,000 to 10,000,000 gallons of high gravity gasoline was the only important development in the Oklahoma (Group 3) and Mid-Continent market during the past week. Otherwise the Oklahoma market showed little change over last week either in regard to buying or prices.

In the domestic gasoline market shipments on contracts are reported "fair" to "heavy" by the sellers but the spot market is still not active. Prices are quoted over a narrower range than they were a week ago, practically all of the cheaper material in the hands of brokers and refiners having been absorbed last week. May business so far has been slow but in a majority of cases, refiners feel that sales will improve not later than the middle of the month with a substantial improvement in prospect before the end of the month. It is conceded that improvement is necessary if the prices established the last few days of April are to continue.

The export purchases which as usual were scattered throughout the Mid-Continent area were approximately one-third less than in April. They will serve to strengthen the position of several participating refiners who otherwise would have been forced to become active again in the domestic market. There were reports in the trade previous to the announcement of export purchases that many refiners would refuse to sell for May on the April basis. The price is based on the quotations at the Gulf Coast as posted by the Export Petroleum Association, Inc., and at present netting the Mid-Continent refiners 7 cents for the 390 endpoint and 7¼ cents, basis North Texas. The May purchases are bringing the same price but should the Coastal prices be advanced before the end of the month the refiners will secure the benefit of this advance on all remaining shipments. While the present export prices are below the general quoted prices for domestic shipment, most refiners realize the importance of keeping current output moving, as a necessary protection to the domestic market which as previously indicated is having all that it can do to hold the advances recently announced.

Other Refinery Products

There has been no compensating activity in other refinery products to offset the dullness in the gasoline situation. While little distress selling has been reported and many refiners are sold up for May, spot kerosene, distillate, gas oil and fuel oil are moving slowly in a soft market. This is a continuance of a situation apparent over the greater part of April. The manufacturers of lubricants and wax in most cases could easily take care of more business at prevailing prices.

Increase Crude Runs

With the approach of the main gasoline consuming speason Mid-Continent refiners are slowly increasing their crude oil runs to stills. The March report of the Bureau of Mines which became available during the past week showed daily average crude runs to stills of 545,600 bbls. during that month which compares with average runs of 531,000 bbls. in February.

The Oil and Gas Journal's check of individual plant operations which will be found elsewhere in this issue indicates that the Mid-Continent operations in May will average 574,000 bbls. daily. This figure is slightly less than the average for May of last year. Many Mid-Continent refiners held back in their runs during the winter months but now are expanding their operations to take care of gasoline requirements.

In this connection it will be noted in the accompanying table that gasoline stocks at Mid-Continent refineries at the

(Continued on Page 193)

REFINED MARKET BAROMETER

Price movements in refined products over the past week were local in scope with few important changes. Gasoline quotations were generally unchanged with a sluggish refinery demand in some areas despite the increased consumption. The consumption where weather conditions have been favorable is running ahead of expectation. The kerosene market has not shown any improvement either in the domestic or export market and prices were reduced by several eastern refiners. A scarcity in bunker fuel oil has developed in the Gulf Coast area and the market is generally firm at East Coast points. In the Middle West and Mid-Continent the fuel oil market including gas and distillates continued slow. Natural gasolines generally firm. Steam refined and bright stocks freely offered in all areas. Wax market soft.

Mid-Continent—Natural gasolines firm. Export purchases aid gasoline market. Kerosenes weak. Fuel oil and gas oil slow. Steam refined and bright stock market unsettled. Wax inactive.

East Coast—Additional advances in tank wagon prices point to higher tank car prices. Kerosene slow. Good demand for bunker oil. Diesel oil active. Little buying in wax. Bright stocks firmer.

Pennsylvania—Bright stocks and some grades of steam refined stock slightly lower following recent crude oil price reduction. Other lubricants unchanged. Kerosene prices lower. Fuel oil weak.

Chicago—More active demand for gasoline with no price changes. Fuel oil easy. Kerosene slow.

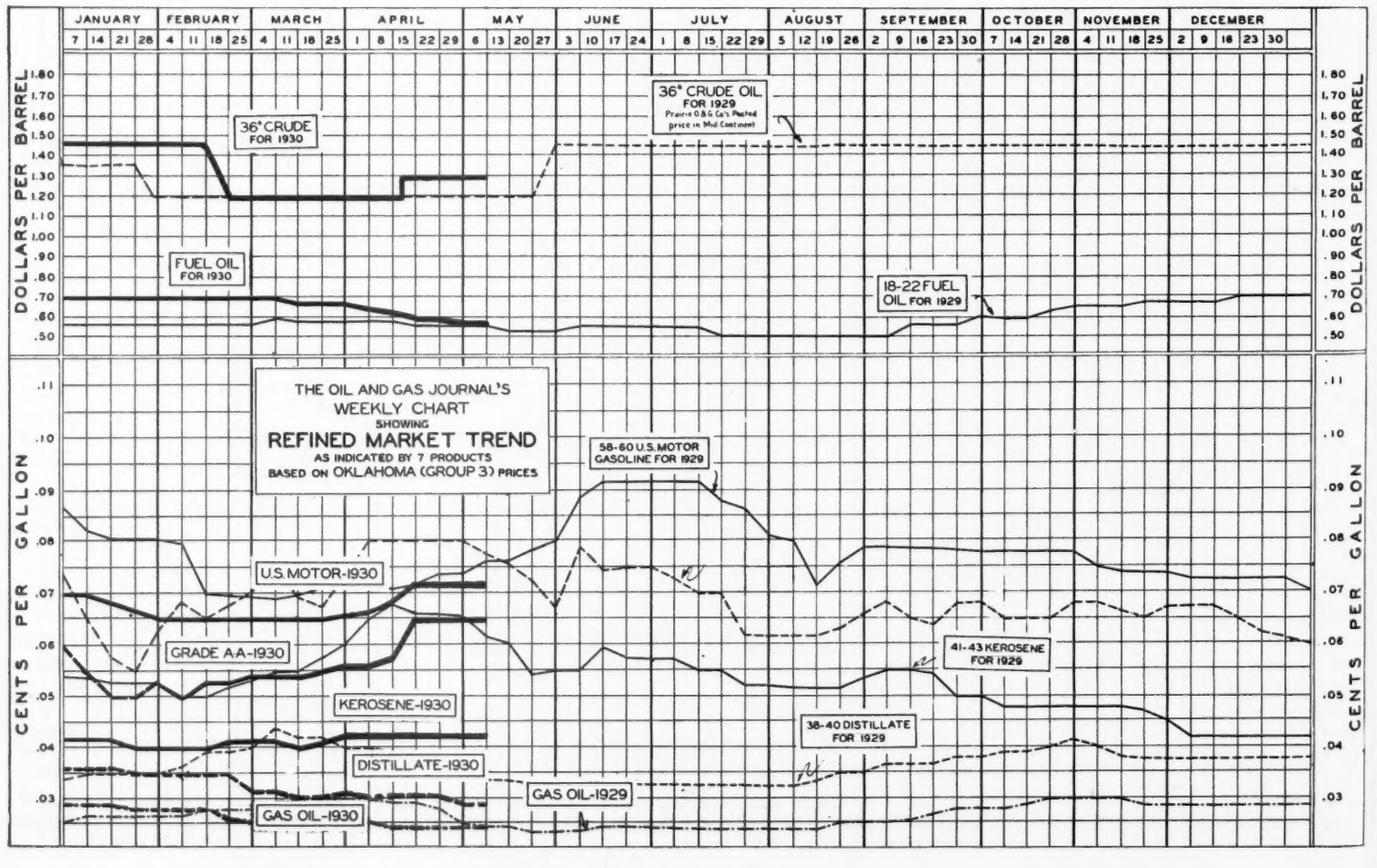
Gulf Coast—Practically no spot fuel available for cargo shipment and prices higher. Other products unchanged.

California—No price changes with better tone to gasoline market.

MID-CONTINENT REFINERY OPERATIONS
(Data given in thousands of barrels)

	Crude run to stills			Gasoline output			Gasoline stocks†		
	Mar. 1930	Feb. 1930	Mar. 1929	Mar. 1930	Feb. 1930	Mar. 1929	Mar. 1930	Feb. 1930	Mar. 1929
Oklahoma, Kansas, etc..	9,851	8,323	9,298	5,343	4,563	5,026	5,124	5,248	5,849
Texas*	5,076	4,802	4,681	2,250	2,003	1,717	1,490	1,545	986
Louisiana-Arkansas* ...	1,986	1,764	2,233	821	654	659	354	311	271
Total	16,913	14,889	16,212	8,414	7,220	7,402	6,968	7,104	7,106

*Except Gulf Coast. †End of month. Data based on Bureau of Mines reports.



Natural Gas Department in Session

Present and Future Growth and Conservation Topics at New Orleans Meeting. Projects for 1930

By Thomas F. Smiley

NEW ORLEANS, La., May 6. — The astounding growth of the natural gas industry, the success with which it is thrusting great transmission lines into areas that seemed out of reach scarcely five years ago, and the increased responsibility laid upon leaders in the industry to conserve this irreplaceable fuel are being emphasized at the May meeting of the natural gas department of the American Gas Association, which opened its business sessions in the Roosevelt Hotel here today. This is the third convention of the natural gas department and it follows 22 held by the Natural Gas Association of America, its predecessor, starting in 1906. Meetings of the main technical and research committee, H. C. Cooper, chairman; the managing committee, H. Morris, chairman; and the advisory committee, S. W. Meals, chairman, were held yesterday and two of the entertainment features planned took place. These latter were the boat ride on the Mississippi River and the grand ball last night.

Wives of many delegates have accompanied their husbands to the natural gas conventions in former years, but the feminine representation is probably larger than usual this time because of the glamor of other days that hangs about this historic city of the Old South. Few if any other places in the entire country have so many spots of dramatic, romantic or tragic interest, and many of these were visited today by the convention women in a tour which embraced this picturesque French district immortalized by George W. Cable in his "Old Creole Days." They saw where Andrew Jackson drove back the British at the Battle of New Orleans; the spot between two ancient live oak trees where General Pakenham, commander of the British, was picked off by one of Jackson's sharpshooters; the ruins of the house in which Pakenham died a few hours later; the house where lived Jean and Pierre Lafitte, daredevil pirates who offered their services to Jackson, were accepted, and who warned Jackson of the approach of Pakenham; the site of the old slave market; the ball and chain and the stocks which were accessories of the old prison across from Jackson Square—these and scores of other things that revived history lessons of schooldays and gave them reality and warmth.

To the natural gas men themselves this year's convention city is of peculiar interest because it was one of the first cities in the country to have gas for domestic purposes and it was one of the last large cities in the South to change from the manufactured to the natural product.

Opened by Chairman Morris

"When people were just beginning to think about using gas New Orleans erected one of the first gas plants in America and for 93 years used this oldest of public utilities," said H. C. Morris, of Dallas, Tex., chairman of the natural gas department, at the opening meeting of the convention this morning. Its change to natural gas a few years ago, after almost a century with the artificial product, is representative of what has occurred over large sections of our country in the past decade. This leads us naturally to a consideration of the tremendous growth of natural gas within the past few years; and perhaps there is no better spot in the country from which to review these changes than this same interesting city which geographically is so close to the very heart of this development.

"Here we find ourselves surrounded by the most remarkable natural gas development in the history of the world. In the Southwest, manufactured gas plants have almost entirely disappeared; the markets comparatively close to the gas fields long since have been taken over by our branch of the industry, and now we see pushing out in every direction from the centers of supply, long gas lines whose size and length were unthought of 10 or even 5 years ago."

Mr. Morris enumerated important cities to which natural gas has been carried or soon will be carried, including Chicago, San Francisco, Salt Lake City, St. Louis, Atlanta, Birmingham, Council Bluffs, Iowa; Lincoln, Neb.; and a score of other cities in the Middle West. He recounted some of the major pipe line systems constructed in recent years and then, taking a look into the future, said:

Plans for This Year

"Among the more important lines projected for 1930 are the 900-mile line from the Texas Panhandle to Chicago; a line of about the same length from the Panhandle to Lincoln, Neb., Council Bluffs, Iowa and a dozen other cities in those two states; the line which will carry natural gas to Albuquerque, N. Mex.; a line to Greeley, Colo.; one from the Wyoming gas fields to Buffalo and Sheridan, Wyo.; extensions of the lines from the Turner Valley Field in Canada to the Big Horn Basin in Wyoming, and lines to Bismarck and Williston, N. Dak.; a second large and important line from the Kettleman Hills to the San Francisco Bay area and the lines in Canada which will supply Moose Jaw and Regina in Saskatchewan and Winnipeg in Manitoba.

"The Atlantic Seaboard is the sole stronghold of industry and population that remains uncaptured by the vigorous advance of our industry. Rumors persist that the day is not far distant when this exception will be removed. With service extended from the Pacific to the Atlantic, from the Gulf to the Canadian border, an industry that a few short years ago was purely local in character will have expanded into one truly national in its scope and in its responsibility for service.

"That the amount of capital involved in such a program of expansion is tremendous can readily be understood by anyone familiar with construction costs, for example, it has been calculated that $100,000,000 of pipe lines has been constructed from one locality—the gas producing areas of northern Louisiana. The vast expansion has been made possible largely by reason of the development of extensive gas reserves in Texas, Louisiana, Oklahoma and California."

Touching on the subject of conservation of natural gas Mr. Morris said:

"The development of large gas reserves would not, in itself, provide a substantial basis for the construction of long lines no matter how tempting the terminal markets might be were it not for other contributing factors. Among these is the better understanding that now exists between oil and gas operators, conservation officials and the public generally in reference to the economic necessity of mitigating the waste of natural gas in the fields and in the methods of utilizing. But despite the progress that has been made in this direction there is much that remains to be done. In some of the very areas from which several of our largest projects receive their supply, there is still such waste as to shock the conscience of thinking people today."

Bernard J. Mullaney, of Chicago, president of the American Gas Association, addressing the convention at the opening session this morning, said the gas industry now represents a capital investment of $5,150,000,000 with natural gas enterprises accounting for about one-third of the total investment. Commenting on the evolution that has taken place in the industry Mr. Mullaney said:

"For nearly 100 years after the gas business originated in London in 1812 it was predominantly, and most of the time exclusively, a lighting business. As a lighting business it seemed to have the world by the tail and a downhill pull. Edison's electric light changed all that. The gas business had to find new outlets, new uses for its product, or eventually quit. You know what happened. The gas business is now predominantly, and almost exclusively, a heating business. The business had to feed the junk pile considerably. It had to scrap many old ideas, old methods, old and crystallized conceptions of corporate responsibility to investors and to customers and also to the general public, as reflected in the rise of public utility regulation. It takes management to make the business go, and skill in management is not all acquired by intuition. Old John H. Experience is still something of a teacher."

In his paper this afternoon on natural gas developments on the Pacific Coast W. S. Yard, vice president of the Pacific Gas & Electric Co., referred to the transportation of natural gas from the Kettleman Hills Field to San Francisco and other cities in that district which never before had this fuel as the industry's outstanding event of the past year in California. Another line nearing completion will carry gas from the field to northern California. When projected lines are completed, Mr. Yard said, natural gas will be served through lines of several companies over a territory extending 450 miles, from San Clemente, 60 miles south of Los Angeles, to Roseville, 80 miles northwest of San Francisco.

Plan for Conservation

A definite plan for the more efficient conservation of natural gas is expected to be submitted to the natural gas department next October in conformity with a resolution adopted yesterday by the committee on natural gas conservation appointed following the Kansas City convention last year. This resolution recommends that this problem "be made the subject of an intensive study and survey by our main technical and research committee through such agencies and with such co-operation from the United States Bureau of Mines and others as it may elect and report a definite plan at the meeting of the natural gas department of the American Gas Association at its annual convention in Atlantic City in October, 1930."

Future Meetings

If plans under consideration become an actuality the annual meetings of the natural gas department after 1931 will be held in Tulsa in connection with the International Petroleum Exposition. The exposition management already has taken action looking to this prospective change, and according to present arrangements it will hold no exhibition next year, but after the exposition in the fall of 1930

(Continued on Page 190)

FLARES FROM THE NATURAL GAS CONVENTION

New Orleans, La., May 6.—Again John B. Corrin, Pittsburgh, Pa., failed to show up. Why he and his pipe should take the edge off the joy of the convention by repeating their absence which marred the 1929 meeting is a mystery. Mr. Corrin himself is vice president and general manager of the Hope Natural Gas Co. His low-geared black pipe is an institution of the industry at large.

Perhaps to show that T. R. Weymouth, Tulsa, president of the Oklahoma Natural Gas Corp. and inventor of the Weymouth formula for gas flow, is at home in fun-making as well as among adiabatic equations, logarithmic cycles and polytropic expansions, they have him on the entertainment committee this year.

One reason the fellows are looking forward to the Mardi Gras in May, billed for Wednesday night as a "riot of fun," is the fact that Frank F. Schauer, Pittsburgh, vice president and general manager of the Equitable Gas Co., is again on the committee in charge. Frank starred in the Kansas City smoker last year. Among his other claims to fame is the fact that he founded the Exalted Society of Cockroaches in Pittsburgh.

After coming to know Joe Creveling, New York, in charge of Cities Service natural gas expansion, and finding out that he entered the natural gas business about 1910, one ceases to wonder that the number of consumers has grown from 1,345,989 in that year to more than 4,000,000 at the present time.

Reid McBeth, public relations director of the Oklahoma Natural, motored down from Tulsa, accompanied by Mrs. McBeth. As a driver Reid never has been accused of dawdling along the road. "That's Fort Smith we're coming to," he announced. "It's a real pretty town, wasn't it?" Mrs. McBeth is quoted as responding as she pulled her hat down a little tighter.

If they conducted a contest to select the best-loved man in the natural gas industry, friends of John M. Garard, Columbus, Ohio, vice president and general manager of the Ohio Fuel Supply Co., say there would be no sense in putting any other names on the ticket.

The natural gas convention, like other meetings that want to do things decently and in order, opens with prayer. Which may have given rise to some conversation in the Roosevelt corridor:

"What's the idea of having a minister pray for the gas industry? It seems to be getting along all right."

"You've got it wrong. He doesn't pray for the industry. He gets up there on the platform, takes a look over the crowd, sees O. K. Shannon, Sam Meals, Colonel Walsh, Frank Chase and the rest, and then prays for the country."

Thorough Test for Jackson Anticline

Added Proof of Presence of Gas With Indication of Possible Oil Field Lead Several Companies to Enlarge Mississippi Holdings

By L. Spraragen

With 14 derricks already up and 8 or 10 additional blocks being built for as many more derricks, the Jackson anticline, long recognized by geologists, is to have a thorough test. Of the 14 derricks now in position several represent wells rapidly nearing completion to the first gas sands.

The presence of gas in commercial quantities was proved when the Jackson Oil & Gas Co.'s No. 1 Mayes, located at the edge of Jackson, was brought in as a gasser estimated at 10,000,000 feet. Gas from this well is now being used for fuel purposes for the drilling of the Jackson Oil & Gas Co.'s second well, No. 1 Swep Taylor.

The second but most important well that gave added proof of the presence of large quantities of gas and also indicated the probable existence of an oil pool was the Gulf Refining Co.'s No. 1 Rainey just outside of the southeastern edge of the city of Jackson. This well created considerable excitement when it came in showing a pressure of 450 pounds making 15,000,000 feet of gas, probably 25 bbls. of oil and 3,000 to 5,000 bbls. of salt water on a 24-hour test. At this time this well is being plugged back in an effort to shut off the salt water for a test of the gas sand.

Fourteen Derricks Up

When this was written the following wells were drilling or soon to begin drilling, the derricks being up in every instance.

1. Jackson Oil & Gas Co.'s No. 1 Mayes, in Section 2-5n-1e; completed as a 1,000,000-foot gas well supplying fuel for drilling same company's second well.

2. Gulf Refining Co.'s No. 1 Rainey, in Section 13-5n-1e; showed 15,000,000 feet gas, probably 25 bbls. oil low gravity and 3,000 to 5,000 bbls. of hot salt water on a 24-hour continuous test. The rock pressure is estimated at 450 pounds. This well is being plugged back and soon will be ready for a test.

3. Jackson Oil & Gas Co.'s No. 1 Taylor, in Section 36-6n-1e; tested salt water at 2,548 feet; drilling and coring continued to 2,575 feet where small gas show was encountered; drill stem test to be made.

4. Louisiana Gas & Fuel Co.'s No. 1 Harris, in Section 2-5n-1e; setting casing at 2,508 feet; took core of gas rock with small gas show on pit; setting casing.

5. Love Petroleum Corp.'s No. 1 Mendoza, in Section 11-5-1e; drilling at 2,250 feet.

6. Love Oil Co.'s No. 1 Bridges & Hilzum, in Section 35-6n-1e; setting surface casing.

7. Interior Oil Co.'s No. 1 Raymond A. Moore, in Section 26-6n-1e; spudded in and drilling ahead.

8. Dome Oil Co.'s No. 1 Elton, in Section 5-4n-1e; drilling near 600-foot mark.

9. Ella Reeder's No. 1 State Asylum, in Section 25-5n-1e; cleaning hole at 2,600 feet.

10. Tri-State Oil & Gas Co.'s No. 1 Wilson, in Section 23-6n-1e; derrick up.

11. Jackson Oil & Gas Co.'s No. 1 Cotton Mill, in Section 34-6n-1e; derrick up.

12. Progressive Oil Co.'s No. 1 Mayes-Bellhaven Heights, in Section 2-5n-1e; derrick up.

13. Cleve Love and others' No. 1 Littlefield, in Section 12-5n-1e; derrick up and moving in tools.

14. Jim Weir and others' No. 1 Ross, in Section 8-6n-2e; derrick up.

Leasing Campaign

Among the major companies who have acquired large lease and royalty holdings on the Jackson anticline and nearby structures are the following: Gulf Refining Co., Louisiana Gas & Fuel Co., Ohio Oil Co., Amerada Oil Corp., Pure Oil Co., Producers & Refiners Corp., Carter Oil Co., Lion Oil & Refining Co., The Texas Company, Sun Oil Co., Magnolia Petroleum Co., Petro Royalty Co., Ramsey Petroleum Corp., Standard Oil Co. of Louisiana, Louisiana Oil & Refining Co., Shell Petroleum Corp. and Simms Oil Co.

Leases on the more favorably considered portions of the structure have brought as much as $100 per acre with practically all of the Jackson anticline under lease. Attention of the land and lease men is now being focused on portions of the Eldorado anticline and the Vicksburg monocline.

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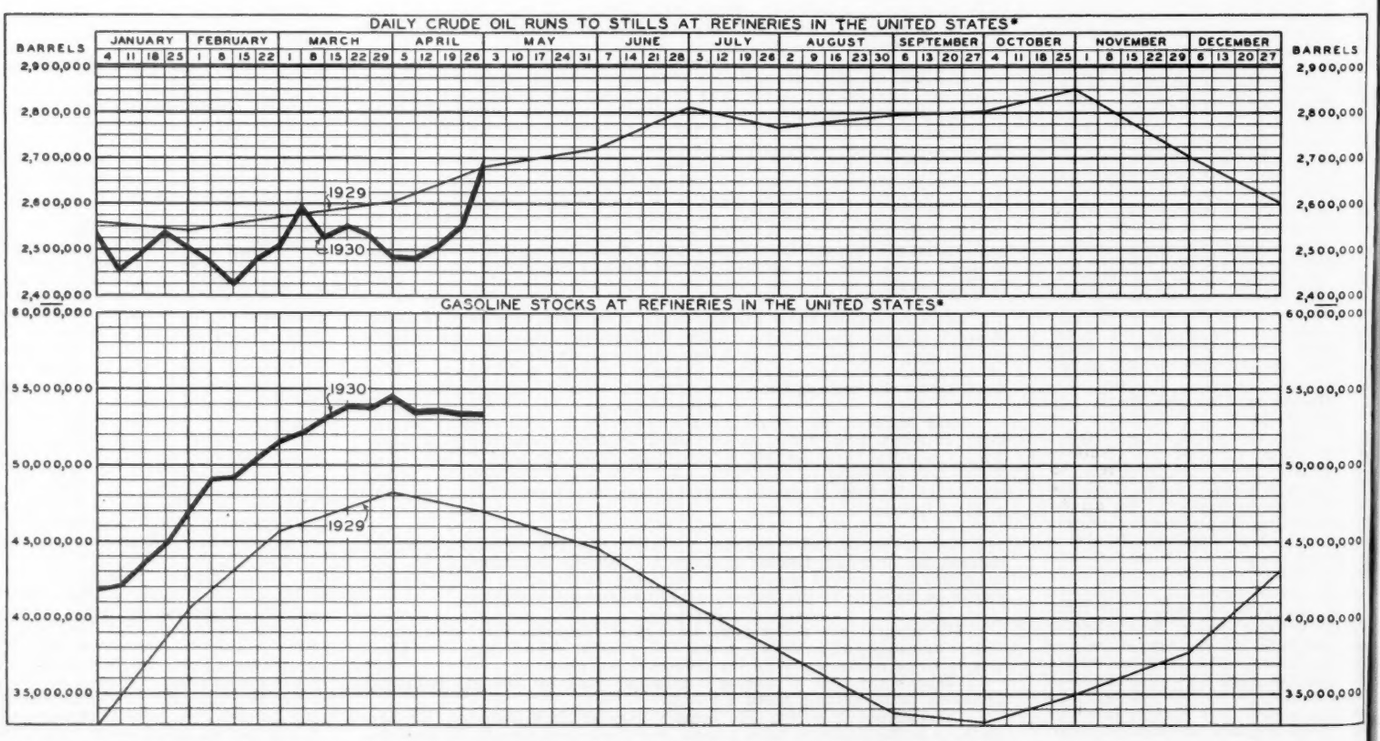
AMERICAN PETROLEUM INSTITUTE WEEKLY REFINERY STATISTICS

The weekly report made to the American Petroleum Institute on refinery statistics—crude runs to stills, gasoline stocks and gas and fuel oil stocks in barrels—for the week ended May 3:

	Week ending May 3				Week ending April 26				Week ending January 4			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
East Coast	100.0	495,814	9,621,000	6,679,000	100.0	517,542	9,592,000	6,466,000	100.0	454,857	5,998,000	7,431,000
Appalachian	91.0	88,329	1,829,000	762,000	91.0	91,714	1,893,000	773,000	91.6	75,571	1,282,000	805,000
Indiana, Illinois, Kentucky	99.5	323,614	8,589,000	3,626,000	99.5	332,985	8,719,000	3,492,000	98.6	289,800	5,483,000	3,505,000
Oklahoma, Kansas, Missouri	89.1	301,829	4,399,000	4,123,000	89.1	319,857	4,366,000	4,123,000	87.7	263,428	3,604,000	3,277,000
Texas	90.8	552,787	8,025,000	9,624,000	90.8	604,243	7,694,000	10,010,000	90.7	539,857	6,590,000	13,757,000
Louisiana and Arkansas	96.8	167,100	2,664,000	1,942,000	96.8	176,059	2,620,000	2,120,000	96.8	160,000	2,161,000	4,499,000
Rocky Mountain	93.6	56,929	2,817,000	1,097,000	93.6	60,729	2,814,000	1,077,000	93.3	41,614	2,273,000	973,000
California	99.3	595,529	15,882,000	108,162,000	99.3	596,485	15,863,000	108,624,000	99.3	642,857	14,826,000	109,770,000
Total United States	95.6	2,581,931	53,826,000	136,015,000	95.6	2,699,614	53,561,000	136,685,000	95.4	2,468,285	42,217,000	144,017,000
Texas Gulf Coast	100.0	423,800	6,948,000	6,984,000	100.0	456,600	6,640,000	7,282,000	100.0	429,585	5,579,000	10,792,000
Louisiana Gulf Coast	100.0	109,328	2,282,000	1,065,000	100.0	108,571	2,253,000	1,220,000	100.0	108,514	1,877,000	3,818,000

(1) Per cent refinery capacity represented. (2) Daily crude runs to stills. (3) Gasoline stocks. (4) Gas and fuel oil stocks.



Data for 1930 based on weekly reports of the American Petroleum Institute. Data for 1929 derived from monthly reports of the Bureau of Mines, Department of Commerce. Figures for last week not shown in graph but are included in above tables.

Crude Oil Production Less in March

Curtailed Operations Permit Reduction in Stocks. Gasoline Shipments From Refineries Continue Heavy With Large Exports

By C. O. Willson

A decrease in crude oil production coupled with a seasonal increase in demand for gasoline with slightly larger crude oil runs to stills at refineries brought an improved statistical situation in March according to the Bureau of Mines' report released during the past week covering crude oil production and refinery operation. This improvement which no doubt continued through April was responsible for the higher posted price schedules which were made effective in most of the fields with the exception of the Pennsylvania area.

The reduced crude oil production was due to the curtailed operations of flush fields in the Mid-Continent and California and a natural decline in some of the older pools. For the country as a whole crude oil production declined from a daily average of 2,662,000 bbls. in February to 2,496,000 bbls. in March a decrease of 162,000 bbls. The production in March of last year averaged 2,662,000 bbls. daily.

This decrease in production permitted a withdrawal of 1,155,000 bbls. in crude oil storage or an average of 37,200 bbls. daily. Thus if producers had continued their March operations on the same basis as in February, they would have added approximately 4,000,000 bbls. to their crude oil inventories.

The reduction in production came largely from three states. California reduced its daily average production from 746,000 bbls. in February to 635,000 bbls. in March, Oklahoma from 631,000 bbls. to 607,000 bbls. and Texas from 833,000 bbls. to 818,000 bbls.

First Three Months

With the March report it is now possible to summarize the first three-month operations of the year. Much of these data are given in the accompanying table. In regard to crude oil the industry so far is accomplishing the aim of keeping its supply less than last year for the same period and in line with the demand. This is in contrast to the situation a year ago.

Last year for the first quarter, the crude oil supply exceeded the demand by 15,293,000 bbls. and that quantity was added to storage. This year the demand the first quarter exceeded the supply by 2,395,000 bbls. This favorable situation has been brought about by a decrease of 3.7 per cent in domestic production and 33.3 per cent in imports resulting in a decrease in total supply of 6.6 per cent. Despite the reduction in stocks the first three months of this year, stocks on March 31 were 26,050,000 bbls. or 5.1 per cent greater than the same date last year due to the accumulations the last nine months of last year.

As was predicted early in the year the total demand for crude oil has been only slightly greater than for the same period in 1929 despite the large increase in gasoline consumption. An increase of 7.1 per cent in gasoline production was obtained the first quarter with only a .5 per cent increase in crude oil runs to stills. This was due to the increased recovery of gasoline from crude oil the yields at refineries including natural gasoline blended at plants being 45.88 per cent which compares with 43.21 per cent the first three months of last year. Including crude oil consumed outside refineries the increase in total demand was 1,482,000 bbls. or .6 per cent.

Crude oil imports continue to show a decline when compared with the same period last year. For the first three months of this year, crude imports were 7,283,000 bbls. or 33.3 per cent less than the first quarter of last year, the reduction being almost as great as the reduction in domestic production. As was the case the first two months, gasoline imports continue to show a large increase so there is probably very little change between the total gasoline available in this country from foreign crude oils.

Gasoline

Petroleum refiners continue to be favored with an exceptionally large increase in gasoline demand and that largely accounts for the improved statistical situation for the first quarter operations. Refiners as a group have kept their crude oil runs to stills at practically the same levels as last year but their en-

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CRUDE OIL AND REFINERY PRODUCTS SITUATION SUMMARIZED

(Bureau of Mines Reports—First 3 Months 1930 and 1929)

SUPPLY AND DEMAND—CRUDE OIL (Bbls.)

First 3 months	Total supply	Total demand*	Excess Supply	Excess Pct.	Domestic production	Imports	Domestic Demand*	Exports	Stocks Mar. 31‡
1930	245,862,000	248,257,000	†2,395,000	†0.9%	231,264,000	14,598,000	242,774,000	5,483,000	532,131,000
1929	262,068,000	246,775,000	15,293,000	6.2%	240,187,000	21,881,000	241,553,000	5,222,000	506,081,000
Increase	†16,206,000	1,482,000			†8,923,000	†7,283,000	1,221,000	261,000	26,050,000
Increase	†6.6%	0.6%			†3.7%	†33.3%	0.5%	5.0%	5.1%

*Derived from government data for comparative purposes. Includes some California residual fuel oil. †Decrease. ‡Includes California residual fuel oil.

SUPPLY AND DEMAND—REFINERY PRODUCTS—GASOLINE (Bbls.)

First 3 months	Total supply	Total demand	Excess Supply	Excess Pct.	Domestic production	Imports	Domestic Demand	Exports	Stocks Mar. 31
1930	111,731,000	99,524,000	12,207,000	12.3%	§108,330,000	3,401,000	83,269,000	16,355,000	55,239,000
1929	102,341,000	87,209,000	15,132,000	17.3%	§101,109,000	1,232,000	73,923,000	13,286,000	48,224,000
Increase	9,390,000	12,315,000			7,221,000	2,169,000	9,346,000	3,069,000	7,015,000
Increase	9.2%	14.1%			7.1%	176.0%	12.6%	23.1%	14.5%
KEROSENE									
1930	13,654,000	14,238,000	†584,000	†4.1%	13,639,000	15,000	9,320,000	4,918,000	8,455,000
1929	13,713,000	14,859,000	†1,146,000	†7.7%	13,650,000	63,000	9,451,000	5,408,000	7,855,000
Increase	†59,000	†621,000			†11,000	†48,000	†131,000	†490,000	600,000
Increase	†0.4%	†4.4%					1.4%	†9.0%	7.6%
LUBRICATING OIL									
1930	8,734,000	7,442,000	1,292,000	17.3%	8,727,000	7	4,935,000	2,507,000	9,561,000
1929	8,398,000	7,885,000	513,000	6.5%	8,391,000	7	4,853,000	3,032,000	8,853,000
Increase	336,000	†443,000			336,000	0	82,000	†525,000	708,000
Increase	3.1%	†5.9%			0.4%	0	1.7%	†17.0%	8.0%
FUEL AND GAS OIL									
1930	103,672,000	‡	‡		96,509,000	7,163,000	‡	9,743,000	32,998,000
1929	110,572,000				108,625,000	1,947,000		9,094,000	30,195,000
Increase	†6,900,000				†12,116,000	5,216,000		649,000	2,803,000
Increase	†6.2%				†11.2%	27.0%		7.1%	9.3%
PETROLEUM WAX (Lbs.)									
1930	171,091,000	130,259,000	40,832,000	31.3%	164,640,000	6,451,000	59,096,000	71,163,000	232,241,000
1929	173,961,000	125,901,000	48,060,000	38.0%	165,284,000	8,677,000	50,350,000	75,551,000	158,404,000
Increase	†2,870,000	4,358,000			†644,000	†2,226,000	8,746,000	†4,388,000	73,837,000
Increase	†1.6%	3.4%			†0.4%	†25.6%	17.3%	†6.1%	46.6%

*Excess demand. †Decrease. ‡Not available. §Includes benzol production and natural gasoline used elsewhere than at refineries east of California. Note—Total supply equals domestic production plus imports. Total demand equals domestic demand plus exports. Data on demand for refined products are based on refinery shipments.

CRUDE OIL RUNS TO STILLS AND TOTAL ALL OILS (Bbls.)

First 3 months	Total crude to stills	Domestic crude to stills	Foreign crude to stills	Natural Gasoline production	Gasoline recovery crude oil‡	Total supply all oils*	Total demand all oils*	Stocks all oils Mar. 31*
1930	232,829,000	218,635,000	14,194,000	13,234,000	45.88%	270,570,000	258,494,000	694,520,000
1929	231,564,000	212,445,000	19,119,000	12,043,000	43.21%	278,139,000	247,221,000	645,381,000
Increase	1,265,000	6,190,000	†4,925,000	1,191,000		†7,569,000	11,273,000	49,139,000
Increase	0.5%	3.0%	†25.7%	10.0%		†2.8%	4.5%	7.6%

*Total all oils includes crude oil, refined products, natural gasoline and benzol. †Decrease. ‡Includes natural gasolines blended at refineries.

Problems of Motor Transportation

Many Angles of Modern Road Transport and Care of Trucks Discussed by A.P.I. Committee

By L. G. E. Bignell
Petroleum Engineering Editor

About 30 members of the American Petroleum Institute Central Committee of the Automotive Transportation Division met in Tulsa on May 5 and 6 to discuss problems dealing with the hauling of refined products and of material for drilling wells, gasoline plants, pump stations and other major operations of the petroleum industry.

R. F. Fike, head of the motor transportation division of the Mid-Continent Oil Co., Tulsa, is chairman of this central group and presided at the two days' session. Among those registered were: Watt E. Babler, Milwaukee, Wis.; R. R. Barlow, Tulsa; J. H. Bayle, New Orleans, La.; E. L. Bell, Drumright, Okla.; R. J. Bevington, Barnsdall, Okla.; S. C. Bovell, Dallas, Tex.; W. A. Dewey, Kansas City, Mo.; Charles Earle, Tulsa; L. A. Farmer, Tulsa; W. M. Gadberry, Kansas City, Mo.; C. E. Jackson, Tulsa; F. D. Jones, St. Louis, Mo.; Rufus B. Jones, Cincinnati, Ohio; H. L. Kennedy, Tulsa; H. R. Leland, Tulsa; Clarence J. Martin, Bartlesville, Okla.; R. S. Mayo, Tulsa; Charles H. McBurney, Tulsa; A. L. McMillan, Bartlesville, Okla.; F. P. Nopper, Tulsa; S. C. Philips, Tulsa; Jack Parker, Houston, Texas; T. G. Price, Tulsa; H. E. Spear, Houston, Texas; W. R. Styron, Houston, Texas; C. F. Walker, Tulsa, and B. M. Wheatley, Bartlesville, Okla.

Chairman Fike in his opening address to the committee stated that this group had been requested to prepare two papers to be presented at the annual meeting of the American Petroleum Institute to be held in Chicago on December 10 to 13 this year, and he suggested that the members present decide upon the subjects to be discussed at Chicago and select two from the five or six topics suggested by the national chairman of the transportation committee of the American Petroleum Institute.

Question of Classification

It was pointed out by Mr. Fike that as this division had been originally organized by the general committee of the American Petroleum Institute they had been placed under the marketing division only, but after taking this up with the committee and pointing out that nearly all of the men in this division in the Mid-Continent district were interested largely in problems dealing with handling equipment for the production department of their companies, the set-up was changed to include the transportation division under both the production and marketing general divisions.

After Mr. Fike's comments upon the work of the committee the general discussion started with the question of just how it would be best for this committee to be classified under the general transportation committee's work, for it was felt by most of the members present that their particular problems in motor transportation did not have any connection with the general problems of the transportation committee which deals with all methods of handling crude and refined products such as pipe line, tank car and tanker problems.

A resolution was adopted providing that this committee ask the A.P.I. General Committee for a classification that would permit it to hold such meetings as necessary during the annual meeting at Chicago under conditions that would permit of full time being given to their discussions.

Automotive Route Studies

The first topic suggested for a paper for the annual meeting was "Automotive Route Studies."

It was stated by one of the members present that his company had tried a rental plan whereby the transportation department fixed the monthly rental for each type of automotive equipment based upon a study of the performance as recorded during the past five years. The sales department was then to employ the driver for this truck, who acts also as a salesman, and the wages paid him and the rental charge made by the transportation department constituted the complete hauling cost.

It was found that a large number of schedules had to be made up in order that equitable charges, both to the sales and transportation departments, could be made, as the kind of haul, style of truck equipment and many other factors all had their effect upon costs.

Proper Operation

To regulate proper operation of the trucks after they were turned over to the sales department in good condition, it was made optional with the transportation department to decide whether the man placed in charge of the truck was careful and capable, and if he did not handle the equipment placed in his charge in a proper manner after the first warning he was dismissed from the service of the company. In a period of 18 months trial of this system it was only found necessary to discharge two drivers, and after this drastic step had been taken all other drivers paid heed to the warnings given them from time to time.

This, in a way, eliminates the ever-vexing problem of routing trucks for so long as the sales department is paying the transportation department a fixed amount for each day's use of its equipment, it is up to them to get the most out of their investment in transportation in the form of daily rental.

This system also permits the sales department to make a quick audit of delivery costs at any time, as the cost of hauling is secured by a very simple arithmetical computation.

A check is made every three months of hauling costs to determine whether the rental charge is an equitable one to each department and any adjustments necessary are made.

Chairman Fike appointed a committee of two to make a report on the desirability of having a paper on this general subject of routing prepared for presentation before the annual meeting, this committee to report at the September meeting of the central committee.

Automotive Bulk Hauling

In the afternoon session the subject of the "Economics of Automotive Bulk Hauling" was quite thoroughly discussed and a note of warning was sounded by several of the members present to proceed with great caution in the matter of increasing the size of the live loads to be distributed by tank trucks and their trailers.

The automobile train has been used by several of the major companies in distributing refinery products partly because many of the interior towns were not on the railroad lines and in some instances it was found that distribution by the automotive method could be done at a lower cost than the same haul could be made by freight.

It was admitted that the railroads are absolutely essential to all industry and unless the difference between hauling by freight and by truck is considerable it is thought by many companies that the risk of doing their own hauling in bulk was hardly justified. A saving of not less than 20 per cent over the freight rate for the same haul was considered a minimum to justify the motor transportation.

It was contended that if the difference between freight rate and motor haul over any given route was over 20 per cent it would be found upon close examination that the freight rate was liable to be too high and should be adjusted.

Another thing to be considered is the length of these automobile trains and their speed on the highway. If they move at safe speeds of from 10 to 18 miles per hour and are over 50 feet in length it will take a passenger car or other vehicle moving at from 35 to 45 miles per hour a considerable time to pass the train. On a road where the travel in both directions is heavy this presents a certain hazard or the car back of the automobile train must remain there for some time and travel at the truck speed.

Trains Cause Traffic Problem

This presents a traffic problem that some state legislatures seem to consider only possible of adjustment by placing a very short limit of length upon the automobile train or truck, and this means a limit to the amount of live load that can be hauled.

It was therefore suggested that in making plans for bulk haulage this condition should be given first consideration, for if investment was made in long trains and then legislation enacted limiting their use this equipment would be useless so far as that state was concerned. It was felt that this problem lies entirely within the control of the superintendents of the motor transport divisions of the major companies and they were urged to use caution in the selection of their equipment.

Storage Facilities

Co-ordination of storage facilities and automotive transportation equipment was discussed briefly and it was pointed out that much practical good can be accomplished by making joint plans for underground storage and truck tanks so that the maximum efficiency might be secured in making delivery of gasoline by the truck tanks to service stations.

The question of which department was to stand the cost of painting company emblems on tank trucks and other automotive equipment brought out some pointed discussion. While most of the members of the transportation committee seemed to think that at least a portion of this additional cost should be charged to advertising they admitted that it was very difficult to make the management see it in this light.

In one instance it was reported that to paint a piece of truck equipment for protection only would cost about $22, whereas to paint and decorate this same tank truck with the colors desired and the company emblem cost about $85. It was the consensus of opinion of those entering into the discussion that at least one-third or perhaps one-half of this additional cost should be charged to the advertising department and it was thought that if the concensus of opinion of those entering lem making some general recommendations the individual members might benefit by the arguments when presented to their respective company executives.

This covered the list of topics suggested by the chairman of the transportation

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Members of the Central Committee of the American Petroleum Institute automotive transportation group in Tulsa, May 5-6.

Closer Study of Gas Fields Needful

Wide Variations in Operating Conditions and Fundamental Differences in Areas Create Necessity for Careful Analyses

By E. L. Rawlins
Natural Gas Engineer, United States Bureau of Mines, Bartlesville, Okla.*

The natural gas industry has become one of the great industries, and its expansion has stressed the importance of the many problems dealing with the design of equipment in the field and throughout the distributing system and with the efficient operation of these complex systems. The proper development and maintenance of gas-producing areas, the development of new markets, the construction of facilities to transmit the gas from the fields to the markets, and other construction and maintenance necessary to satisfy both domestic and industrial consumers have necessitated the investment of large sums of capital.

The natural gas business is a utility business, and the gas companies not only have to obtain earnings on their investment but they have the moral duty of supplying consumers, regardless of cost, when necessity demands it. Satisfactory net earnings on invested capital over a long period is possible only by practicing strict conservation of natural gas and continually studying the problems of producing, transmitting and distributing the product. As the industry has grown and expanded the complexity and importance of certain problems connected with it here changed accordingly. An adequate gas supply is essential before investments can be made in transmission and marketing facilities.

In order to secure more efficient operation and to conserve the gas and prolong the life of the properties, sound engineering principles, based upon detailed study, must be applied to methods of drilling, cementing, completing wells, casing, tubing, and other phases of gas production. The intensive study, first, of individual gas well characteristics; second, of a gas field; and third, of a group of gas fields which is the source of supply for any particular system of interconnection transmission lines furnishes information that is valuable to any large operating gas company. One factor that has stressed this importance is the construction of long distance, high pressure pipe lines.

Need for More Study

With a limited market requiring a relatively small transmission system, which represents a limited investment and a small operating capital, a general estimate of the total reserves is adequate. However, for markets far removed from gas-producing areas which require large pipe line projects and which involve the expenditure of considerable money, there is need for a much more careful study of gas fields.

Water encroachment possibilities are more serious; reserve estimates must be based upon sound facts and logic; the ability of individual gas wells to deliver gas under any pressure conditions and the combination of individual wells to secure the best results under peak load conditions should be studied; knowledge upon which to base a record of the producing condition of a gas well at any time is needed, and the gas well should be kept in its most efficient operating condition; the differentiation between gas delivered to market directly by well pressures and gas that has to be pumped is an important economic problem; the proper control of gas well deliveries with back pressures to eliminate water encroachment and sand troubles and to prolong the producing life of the wells is an important operating problem; and there should be considerable more knowledge of the physical properties of gases.

In reviewing the various intensive investigations that have been made in the natural gas industry, it is surprising to find how much the studies of facilities and operation from the well head connections to the consumer overshadow the studies of underground conditions. In the transmission of gas through pipe lines and the distribution to the consumers, researches into the flow characteristics of the gas and other basic problems have received considerable attention. However, little real investigative work of which results could be used as a basis for the flow characteristics of the gas from the producing sands into the well has been done.

The discussion will be limited primarily to individual wells and fields, the flowing characteristics of the gas in the sand and the producing string which influence reserve estimates, the availability of the gas in the sand, and the factors that are important to the operation of the entire production, transmission and distribution system.

Production in the Southwest

Many of the major projects of construction of long distance transmission lines during the past few years have originated in the fields of the Southwest. It is interesting to know that in 1928 approximately 1,568,129,000,000 feet of gas was produced in the United States as marketable gas; and of this amount, 850,672,000,000 feet, or 55 per cent of the total was produced in Louisiana, Oklahoma and Texas. Preliminary estimates for 1929 indicate a total production of at least 1,900,000,000,000 feet, and probably a large part of this gas was produced in the three southwestern states. Each of these three states has large gas fields with reserves for years to come in addition to numerous smaller gas areas more or less associated with the production of oil. When such natural gas sources as the Richland, Monroe, Oklahoma City and Panhandle Fields are considered, and in many other smaller but valuable sources, the expansion of the industry to create additional large markets can be understood. Likewise, the study of the sources of supply becomes increasingly important.

The estimation of natural gas reserves requires the combination of a small amount of mathematical and fundamental knowledge and a considerable amount of common sense. The ability to realize the pertinent factors applicable to any particular project and to account for these factors in a logical manner is necessary. A few of the principles of estimating reserves have been discussed in various papers and reports. The two methods of estimating reserves of gas most commonly used are the saturation method and pressure volume method.

Saturation Method

The saturation method is based upon calculating the actual volume of gas in the sand at any rock pressure (preferably the original rock pressure in the sand) from the porosity of the sand, the thickness of the sand, and the productive area. In other words, the actual volume of gas occupied in the total pore space in the sand is calculated. The calculation is based upon the following formula:

$$V = A\ t\ p\ P_1/P_0$$

Where V=volume of gas contained in the sand, expressed in cubic feet at atmospheric pressure,

A=total productive area of the field, square feet,

t=thickness of the sand, feet,

p=porosity of the sand, per cent,

P_1=absolute rock pressure, pounds per square inch,

P_0=atmospheric pressure, pounds per square inch.

If the calculation is based upon the original rock pressure, the difference between this volume of gas and the volume that has been produced since these conditions existed represents the volume of gas remaining in the sand.

The pressure volume method of computing gas reserves is based on the decline in rock pressure and the volume of gas produced from the sand during a particular decline in rock pressure. The volume of gas remaining in the sand after a decline in rock pressure from P_1 to P_2 is as follows:

$$V = V_p \frac{P_2 = P_t}{P_1 = P_2}$$

Where V=volume of gas in the sand at the rock pressure,

P_2 expressed in cubic feet at amospheric pressure,

V_p=volume of gas produced during a decline in rock pressure from P_1 to P_2,

P_1=initial rock pressure of the decline,

P_2=final rock pressure of the decline,

P_t=pressure in the sand at which flow from the sand will cease.

The volume pressure method of estimating gas reserves can be illustrated in another way. Since it is assumed that the decrease in actual volume is proportional to the decrease in rock pressure, if the rock pressure has decreased 10 per cent from the original, a volume of

(Continued on Page 172)

*Before May convention Natural Gas Department, A.G.A., New Orleans, La.

METHODS FOR CONTROLLING GAS PRODUCTION IN CALIFORNIA

By R. H. Pence
Signal Engineering Co.

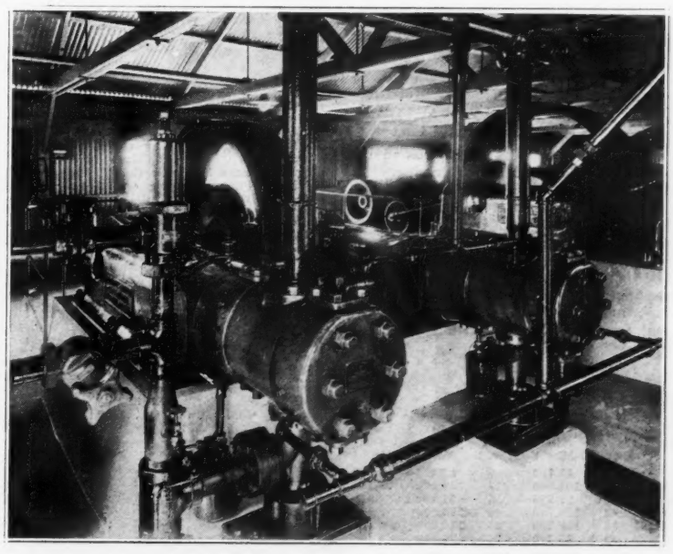
The California Gas Conservation law has had its first real test in the Santa Fe Springs Field. In large part operators have shown a willingness to obey the law and have succeeded in cutting their gas production to a point in agreement with the order issued by the court. Luckily for all Santa Fe operators, Judge Hazlett in his order allowed a given volume of gas to be produced by each operator rather than a given gas-oil ratio at which gas could be produced. Basing the order upon the actual consumption of gas in and from the field, a ratio was struck upon the potential oil production from the field at that date. This ratio amounted to 1,200 feet of gas per barrel of oil. Thus, 1,200 times the operator's oil potential established the volume of gas that he was allowed to produce regardless of the oil that could be lifted with this volume of gas. It is apparent that this made no pretense of regulating the actual gas-oil ratio except where the total potential oil was produced.

In their endeavor to comply with the court's order the operators have resorted to many methods for controlling their gas production. Oil production, as always, meets the payroll, and it is this oil that governs the success or failure of any gas control method. In other words, even though the gas production was brought down to the allowable, if the oil production was reduced greatly the method would not be acceptable to the producer. He feels that he simply must have the oil. In many cases the oil production has governed the willingness of the operator to obey the court's order.

Beaning the Well

The first measure put in use to control the gas consisted of beaning the well, causing the well-head pressure to rise. In many cases this procedure, in lessening the gas, decreased the oil so much that it was not acceptable. Another method was to lower and adjust the size of the tubing already in the well. In most cases where this method was used a great betterment was noted. In wells that were producing through the oil string and without tubing it was found that the injection of tubing in the well through a special head, while the well was still flowing, was found quite accept-

(Continued on Page 175)



Compressor converted to single stage for high pressure service, using gas from high pressure separators for control of formational gas from flush wells.

May Crude Runs Less Than Year Ago

Several Mid-Continent Refineries Resume Operations. Hope to Balance Gasoline Production With Demand

By W. T. Ziegenhain

Despite an increase of 19,050 bbls. in the daily refinery crude runs in the Mid-Continent area during May, this year's average is slightly below that of a year ago. There has been no tendency for refiners to materially increase runs even though consumption is increasing rapidly. This is due principally to the rather heavy stocks of gasoline being carried. Several shutdown plants will renew operations in May but these are small and their effect has been included in the above increase.

Oklahoma refiners will increase their runs 9,000 bbls. during May, the largest factor in the increase for the total Mid-Continent. The second largest increase will occur in the North Central Texas area where runs will average 115,300 bbls., or 5,100 bbls. above those for April. Kansas will also show a substantial increase while Arkansas and West Texas will show very slight increases. The group of North Louisiana refineries is the only one to show a reduction.

RUNS TO STILLS AT MID-CONTINENT REFINERIES

1928	
April 1	**451,225**
May 1	**479,225**
June 1	**487,135**
July 1	**506,310**
August 1	**543,625**
September 1	**563,270**
October 1	**547,820**
November 1	**550,000**
December 1	**520,000**
1929	
January 1	**508,550**
February 1	**506,800**
March 1	**514,950**
April 1	**530,530**
May 1	**577,500**
June 1	**585,030**
July 1	**565,800**
August 1	**555,250**
September 1	**552,300**
October 1	**544,720**
November 1	**545,473**
December 1	**540,630**
1930	
January 1	**535,460**
February 1	**519,355**
March 1	**531,500**
April 1	**555,250**
May 1	**574,300**

With 574,300 bbls. as the daily crude runs in the Mid-Continent refineries for May of this year the average is 3,200 bbls. below that of a year ago. Up to this month the 1930 runs have been consistently above those of a year ago and the conservative manner in which refinery operations are now being increased to meet the coming greater seasonal demand simply reflects the intention of holding gasoline production as near in line with shipments as possible.

Oklahoma

Most of the increase in the Oklahoma crude runs is accounted for by the increased runs in relatively few plants. One new refinery was added to the list of operating plants on the first of the month when the Electrol Refining Co. at Oklahoma City started operations on a full schedule. This plant has a capacity of 3,000 bbls. but crude runs are being maintained considerably below this figure at this time. The Texas Pacific Coal & Oil Co.'s plant at Wynnewood will resume operations May 15 and will run 2,000 bbls. per day over the balance of the month.

Kansas

Except for the increase in the crude runs in the refinery of the Standard Oil Co. of Kansas, at Neodesha to 12,000 bbls., the operations of the plants in this territory remain practically unchanged. Several others have made increases of 500 to 1,000 bbls. accounting for the increase of 4,400 bbls. shown for the State. All plants are now operating.

North Central Texas

North Central Texas refinery operations will remain practically unchanged during May except for slightly higher crude schedules in a few plants. There is a mixed set of conditions influencing the operations of the plants in this area, but in general, the movement of gasoline has been slower than anticipated and crude runs are being held down proportionately. A few refiners, particularly the Phillips Petroleum Co., have had to buy gasoline on the spot market to fill the requirements of their own stations. The Phillips company has increased the crude runs in their Borger refinery for May and has started up three new cracking units so the gasoline output will be brought more in line with the requirements.

West Texas

Two refineries have been added to the list of operating plants in West Texas, and these will increase the average runs in this area approximately 3,000 bbls. during May. The Sweetwater Oil & Refining Co. at Sweetwater will also maintain a regular schedule of crude runs during May but this has been reduced to 200 bbls., only enough to fill the local requirements. The two plants to resume operations are the Magnolia Petroleum Co.'s plant at Luling and the Big Lake Oil Co.'s refinery at Big Lake. Approximately 2,500 bbls. of crude will be run in the Magnolia plant. Operations in this plant were renewed after the completion of the 6-inch gasoline line from the refinery to San Antonio and is said to be the first gasoline line in Texas.

Arkansas and North Louisiana

Except for renewing operations in the James H. Berry & Sons' refinery at Waterloo, the Arkansas operations were unchanged. The North Louisiana operations were also generally unchanged except for shutting down The Texas Company's plant at Shreveport. The present plan of the company is said to be to operate the plant two months out of three until marketing conditions in the local territory are improved.

MID-CONTINENT REFINERY OPERATIONS

(Based on operations May 1 and April 1)

Districts—	No. of plants May 1	Daily crude cap. (bbls.)	Daily crack. cap. (bbls.)	Plants oper. May 1	Runs to stills May 1	Plants oper. Apr. 1	Runs to stills Apr. 1	Daily inc. May 1
Arkansas	9	44,800	16,750	9	33,700	8	32,400	1,300
Kansas	15	140,000	77,400	15	101,900	15	97,500	4,400
North Louisiana	6	58,700	21,000	4	28,950	5	31,100	*2,150
Oklahoma	46	311,800	117,050	43	215,750	42	206,750	9,000
North and Central Texas	37	166,700	34,750	35	115,300	35	110,200	5,100
West Texas	31	142,000	44,700	29	78,700	25	77,300	1,400
Total	144	867,500	311,650	135	574,300	130	555,250	19,050

*Decrease.

REFINERY OPERATIONS IN KANSAS

(Plants which have been in operation during the past year)

	Daily capacity	Runs May 1	Runs Apr. 1
Barnsdall Refineries, Inc., Wichita	4,000	2,200	2,000
Derby Oil Co., Wichita	6,000	5,500	5,500
Eldorado Refining Co., Eldorado	3,500	3,000	3,000
Golden Rule Refining Co., Wichita	1,500	1,000	1,000
Kanotex Refining Co., Arkansas City	10,000	6,000	7,000
Independent Oil & Gas Co., Kansas City	6,000	5,000	5,000
National Refining Co., Coffeyville	6,500	5,000	5,000
Peerless Oil Refining Co., Chanute	3,000	2,000	1,800
Shell Petroleum Corp., Arkansas City	22,000	17,000	17,000
Sinclair Refining Co., Coffeyville	10,000	11,000	11,000
Sinclair Refining Co., Argentine	9,500	5,500	5,000
Skelly Oil Co., Eldorado	23,000	14,500	13,700
Standard Oil Co. of Kansas, Neodesha	20,000	12,000	8,000
Vickers Petroleum Co., Potwin	3,500	2,200	2,500
White Eagle Oil Corp., Augusta	10,000	10,000	10,000
Total	140,000	101,900	97,500

REFINERY OPERATIONS IN OKLAHOMA

(Plants which have been in operation during the past year)

	Daily capacity	Runs May 1	Runs Apr. 1
Anderson-Prichard Oil Co., Cyril	5,000	4,500	4,500
Barnsdall Refineries, Inc., Barnsdall	6,000	4,000	4,000
Barnsdall Refineries, Inc., Okmulgee	10,000	5,000	5,500
Bell Oil & Gas Co., Grandfield	4,500	2,000	2,500
Champlin Refining Co., Enid	16,000	10,000	9,500
Citizens Refining Co., Seminole	1,000	(*)	100
Continental Oil Co., Sapulpa	10,000	1,500	1,500
Continental Oil Co., Ponca City	30,000	18,000	15,000
Cushing Refining & Gasoline Co., Blackwell	1,800	1,500	1,800
Cushing Refining & Gasoline Co., Cushing	3,500	3,000	2,200
Deeprock Oil Corp. (Shaffer), Cushing	10,000	10,000	10,000
Eason Oil Co., Enid	5,000	3,000	2,500
Electrol Refining Co., Oklahoma City	3,000	1,200	(*)
Empire Oil & Refining Co., Cushing	5,000	4,200	4,700
Empire Oil & Refining Co., Okmulgee	4,000	4,000	4,000
Empire Oil & Refining Co., Ponca City	8,000	8,000	7,500
Garber Refineries, Inc., and Omar Refining Co., Garber	3,500	3,000	2,400
Globe Oil & Refining Co., Blackwell	7,500	7,000	7,000
Globe Oil & Refining Co., Cushing	15,000	11,500	10,000
Homaokla Oil Co., Allen	3,000	2,000	1,500
Illinois Oil Co., Cushing	3,000	(*)	(*)
Imperial Refining Co., Ardmore	5,000	2,800	2,800
Independent Oil & Gas Co., Okmulgee	5,000	5,000	5,000
Johnson Oil Refining Co., Cleveland	6,000	5,000	5,000
Mid-Continent Petroleum Corp., West Tulsa	40,000	22,000	22,000
Northwestern Refining Co., Tonkawa	3,000	3,000	3,000
Peppers Gasoline Co., Covington	1,000	750	750
Pierce Oil Corp., Sand Springs	8,000	7,000	7,000
Producers Oil Co., Bristow	2,500	1,500	1,500
Producers & Refiners Corp., West Tulsa	6,000	5,000	4,900
Pure Oil Co., Ardmore	5,000	2,000	2,100
Pure Oil Co., Muskogee	9,000	8,000	8,000
Remington Oil Co., Wewoka	2,000	(*)	(*)
Rock Island Refining Co., Beckett	2,500	2,500	1,800
Sun Oil Co., Yale	5,000	4,800	4,600
Sinclair Refining Co., Muskogee	1,000	900	400
The Texas Company, West Tulsa	15,000	15,000	15,000
Texas Pacific Coal & Oil Co., Wynnewood	2,500	1,000	(*)
Tidal Refining Co., Drumright	11,000	10,000	10,000
Transcontinental Oil Co., Boynton	2,500	2,000	2,000
Transcontinental Oil Co., Bristow	5,000	4,000	4,000
Western Oil Corp., Beckett	2,000	1,500	1,500
White Oak Refining Co., Allen	8,000	5,000	6,000
Wilcox Oil & Gas Co., Bristow	5,000	3,000	2,000
Wirt Franklin Petroleum Corp., Ardmore	4,000	2,800	2,300
Yale Oil Corp., Yale	1,500	1,000	900
Total	311,800	215,750	206,750

*Shut down.

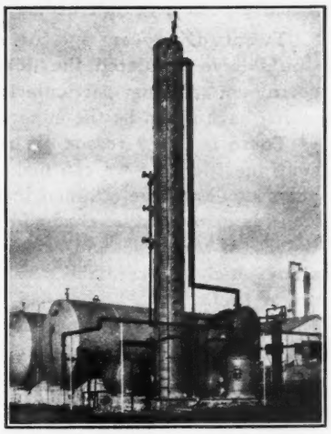
REFINERY OPERATIONS IN WEST TEXAS

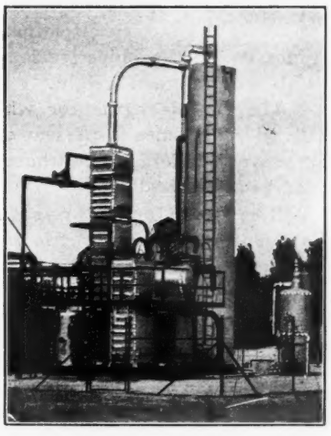
(Plants which have been in operation during the past year)

	Daily capacity	Runs May 1	Runs Apr. 1
Amarillo Producers & Refiners Corp., Pyote	3,000	1,500	600
Big Spring Refining Co., Big Spring	2,500	1,500	900
Big Lake Refining Co., Big Lake	2,000	500	(*)
Bluebonnet Oil Refining Co., Wickett	5,000	3,000	2,000
Burford Oil Co., Pecos City	6,000	5,000	5,000
Central Texas Refining Co., Brownwood	2,000	700	600
Central Texas Refining Co., Luling	2,500	1,900	1,400
Coltex Refining Co., Colorado	10,000	6,000	8,000
Cosden Oil Co., Big Spring	15,000	6,000	9,000
Del Rio Refining Co., Del Rio	5,000	2,900	3,000
Grayburg Oil Co., San Antonio	6,000	3,000	3,000
Great West Refining Co., Big Spring	8,500	3,700	3,500
Gulf Oil & Refining Co., Sweetwater	5,000	5,000	5,000
Humble Oil & Refining Co., San Antonio	5,000	2,300	2,600
Humble Oil & Refining Co., McCamey	15,000	9,500	8,000
Magnolia Petroleum Co., Luling	3,000	2,500	(*)
Misko Refineries, Inc., Laredo	1,500	500	500
Mid-Tex Refining Co., Midland	2,500	(*)	(*)
Pasotex Petroleum Co., El Paso	10,000	8,300	9,000
Pecos Valley Refining Co., Pyote	8,500	(*)	(*)
Pioneer Oil & Refining Co., Somerset	1,500	1,000	1,000
Richardson Refining Co., Big Spring	6,000	4,000	3,000
Rio Grande Oil Co., El Paso	6,000	2,000	4,000
San Angelo Refining Co., San Angelo	2,000	500	500
Sweetwater Oil & Refining Co., Sweetwater	2,000	200	(*)
The Texas Company, San Antonio	3,000	2,500	2,500
The Texas Company, El Paso	1,500	1,000	1,000
Tonkawa Petroleum Co., Pyote	5,000	2,500	2,200
Texas Mexican Oil & Refining Co., Laredo	1,000	200	200
Texas Petroleum Products Co., Somerset	1,500	800	800
Wickett Refining Co., Wickett	2,500	200	(*)
Total	142,000	78,700	77,300

*Shut down.

(Continued on Page 99)





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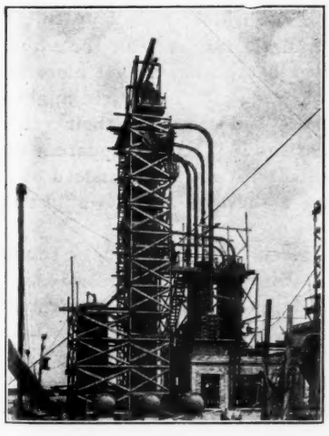

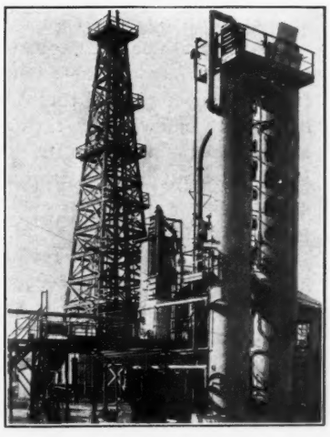

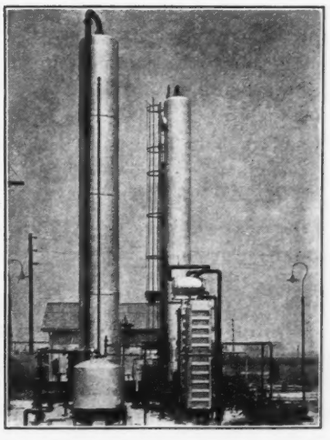

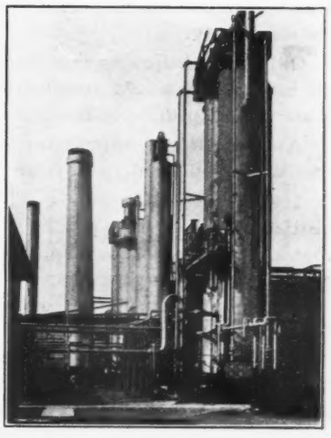

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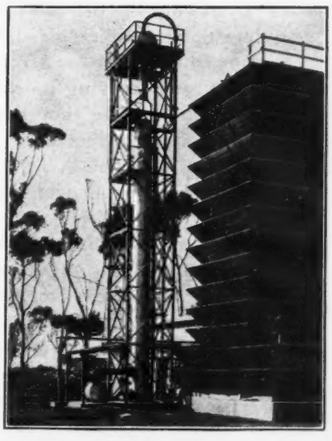

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NEW YORK CITY

The OIL and GAS JOURNAL

PRODUCING REFINING ENGINEERING MARKETING

Published Weekly by
THE PETROLEUM PUBLISHING COMPANY
114-116 West Second Street
TULSA, OKLA.

Established as an International Publication in 1910 by Patrick C. Boyle.

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DIESEL OIL VS. GASOLINE

Recent developments in Diesel fuel motors, especially in airplanes, have created more interest as to future possibilities of that fuel in internal combustion engines. Some have even gone so far as to predict that the present so-called gasoline age will be succeeded by a Diesel fuel period, cheap Diesel oil giving greater power for less money.

Only those believing this fear such a radical readjustment in the oil business as would result from there being no market for the present most profitable fraction of crude oil.

A study of the manufacturing and economic factors will show that there is no real foundation for such fear.

In the first place we are far from having exhausted the possibilities of power from gasoline. In the next we have no assurance that a transition to Diesel power would mean a continuance of the present prices for that fuel.

As pointed out by C. F. Kettering of the General Motors Research Corporation we have just begun to find out what we can do with the internal combustion engine operated with a carburetted fuel such as gasoline.

The motor industry has determined from a practical angle what the petroleum chemists have known for a long time, the wide differences in the characteristics of motor fuel based on distillation range and on molecular structure.

Where a few years ago gasoline was considered good or bad according to its boiling range and its chemical purity we have now reached the point where we are interested primarily in the hydrocarbon constituents of these fuels.

This is indicated in the rapidly increasing demand for antiknock motor fuel, the detonating quality being almost entirely dependent upon chemical properties of the fuel, although the distillation range has also something to do with it.

Mr. Kettering says we have achieved only 30 or 40 per cent of what can be attained towards securing the so-called perfect carburetted fuel for the internal combustion engine. He and others have pointed out that as improved fuels are made available consumption can not only be increased in the field we now have but in new fields where other fuels are used at the present time.

He sees a broader, rather than a narrower, field for gasoline.

The question how we are going to improve gasoline more than we have already done can be answered by pointing to what has actually been accomplished.

Twenty-five years ago, or even 15 years ago, probably no one would have predicted the developments that have been made in petroleum refining, particularly in the art of cracking heavier oils which have given us the superior motor fuel we now enjoy.

There is every reason to believe that these improvements will continue and that we can make the same progress in the next ten years that we have attained in the past decade.

It is also possible that additional aid will be obtained through the use of chemicals and by improvements in the design of engines, all of which will contribute to the evolution of gasoline as the ideal motor fuel.

So much for the manufacturing and utilization aspects. There remains the economic angle to be considered.

Some have mistakenly concluded that because Diesel fuels are cheap they will continue so. Anyone familiar with petroleum refining methods knows this cannot be true.

To become a competitor of gasoline Diesel fuel must have certain very definite specifications for use in internal combustion engines where the objective is to obtain the maximum horsepower with the minimum weight.

The Diesel engine for which practically all the demand for Diesel fuel comes at present are stationary engines of the marine type, very different from those that are necessary in the automotive and aviation fields.

Diesel fuel for the present main uses is successful where there is a constant load with little variation. For automotive or aerial use the fuel must have flexibility, be capable of quick changes, acceleration, increased load or demand for power.

It can not be expected that Diesel fuel meeting the necessary specifications, requiring greater refining than the present product, can be secured for the same price as today.

Over the country as a whole, including natural gasoline blended at refineries, we obtain a yield of gasoline in excess of 45 per cent and it is conceded that if marketing conditions justify it this can be increased to 60 per cent in the near future.

No accurate data as to yields of Diesel fuel suitable for automotive engines are available but it would probably be not more than five or ten per cent of the barrel of crude oil. This yield might be increased somewhat if refiners were concentrating their efforts along this line but from that comparison it is readily apparent that, if we shift our engines from gasoline to Diesel fuel, instead of decreasing our expense we shall have a shortage which would mean prohibitive prices.

Based on our present refinery processes we have for the country as a whole 30 to 35 per cent straightrun gasoline and all of the remainder that is necessary can be made into carburetted fuel suitable for current operation.

On the other hand, looking at it from the standpoint of Diesel fuel we would sacrifice the 30 to 35 per cent of straightrun gasoline with only a small percentage of the remaining fractions that could be made into fuel suitable for automotive engines.

This, of course, does not minimize the importance of the Diesel fuel development which it is hoped will be widened because it gives the industry a market for a fraction of the crude which has not for some time been carrying its share of the burden of refinery operation. But to suppose that Diesel oil will supplant gasoline as a motor fuel is not supported by the facts from either a manufacturing or sales viewpoint.

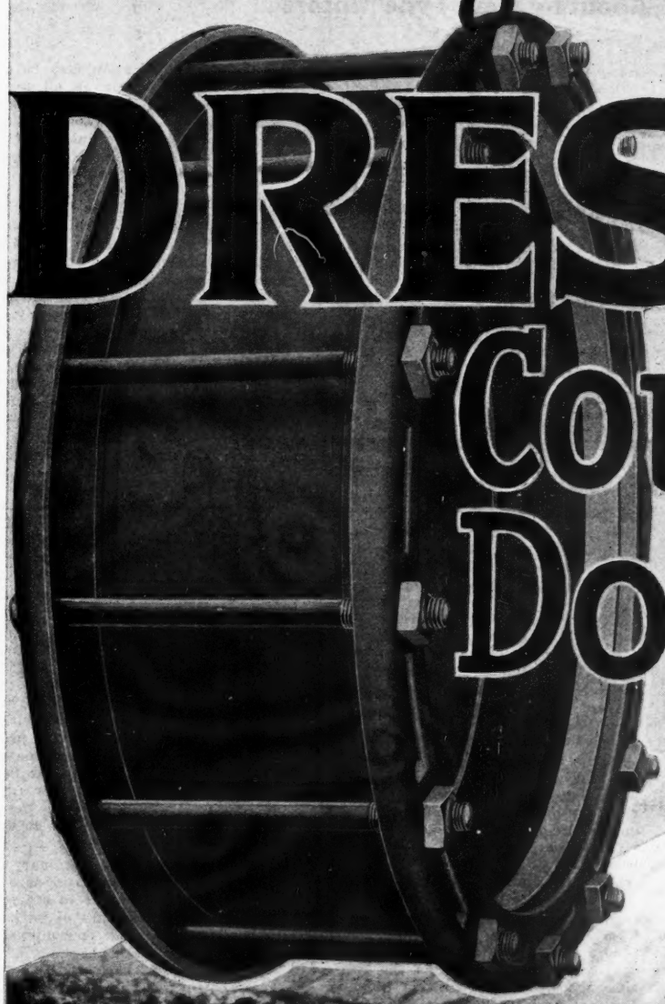
Such a development would indeed be a complete reversal of the whole scientific trend which has been built upon the breaking down of heavier molecules into the lighter ends.

Potentially there is 90 per cent of gasoline obtainable from crude; practically almost every fraction of crude can be converted into carburetted motor fuel, and with hydrogenation we can go even farther and by supplying certain properties from outside may obtain more than 100 per cent.

What would be the economic effect of trying to replace this abundant fuel with a Diesel fuel so much more limited in yield from crude?

In the Higher Altitudes

DRESSER Couplings Dominate!



Here is a short section of the Amarillo to Denver 22″ Dresser coupled high pressure natural gas pipe line. Its extreme flexibility is obvious, and after one year of service its absolute tightness and reliability under extremely high pressures and severe operating conditions has been demonstrated.

S. R. DRESSER MFG. COMPANY - BRADFORD, PENNA

Trends In Motor Oil Manufacture

Development of New Methods Keeping Pace with the Changes in Demand Brought About by New Type Motors

By C. K. Francis

The first lubricating oils were distillates of low viscosity but the more viscous stocks were obtained as residues after the removal, by distillation, of the lighter products from the crude oil. The use of this kind of oil soon demonstrated that further refining was desirable so an improvement was introduced by continuing the distillation and making a classification of the fractions on the basis of viscosity. A further step toward better quality was the removal of the wax. The entire lubricating cut became known as wax distillate.

The wax distillate, which is the fraction following gas oil, was cooled for the purpose of causing the wax to solidify. This was separated at a low temperature in filter presses under high pressure. The wax-free oil, called pressed distillate, was then reduced in a still to a lubricating stock of the desired viscosity. When reducing, considerable steam was used to prevent the oil from burning or cracking. The usual products obtained as distillates were heavy naphtha, gas oil and low viscosity lubricating oil; the residue was the base for the heavy, or high viscosity lubricating oil.

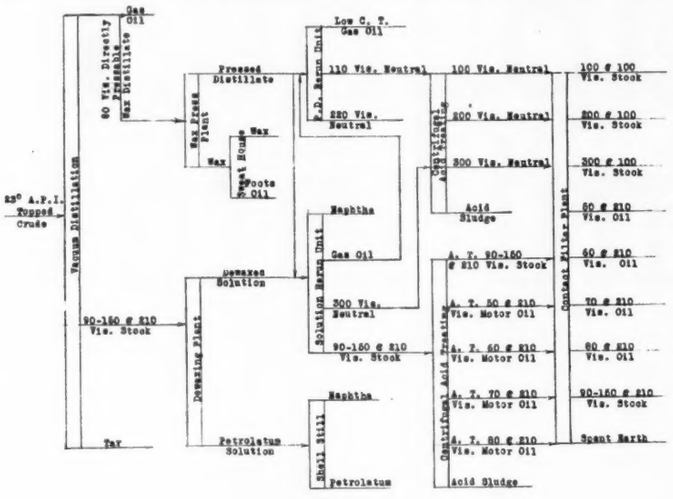


Chart 1.

The reduced lubricating stocks were further refined by treating and filtering. The treating process made use of sulphuric acid in agitators and a solution of caustic soda as a neutralizing agent. The final step in the process was to filter the oil through fuller's earth until the desired color was obtained. The refiners frequently manufactured two foundation grades, a light and a heavy oil, from which various other grades were prepared by proper blending. An example of this practice, on the basis of Mid-Continent crude, produced oils with the approximate properties given in the table.

Test—	Temperatures are °F. Light oil	Heavy oil
Flash	320-400	375-425
Fire	400-460	460-500
Pour	10-30	20-35
Viscosity at 100°F.	50-150	200-400
Color	2	3-dark red

In the past certain crude oils containing the proper lubricating base were distilled with considerable steam for the production of a heavy lubricating oil, known as steam refined stock, after the gas oil and a part of the wax distillate had been removed. Some steam refined cylinder stock continues to be made by some refiners but more exacting demands of the market have to a large extent replaced this oil with the modern bright stock. Cylinder stock should have a high flash and fire test; the color should be green to red. A large number of cylinder stocks when tested gave the results shown in the table.

	Temp. °F.
Flash	500-600
Fire	575-700
Pour	40-70
Viscosity at 210° F.	130-250
Color	green-red

One of the most serious problems which the refiner of lubricating oils has endeavored to solve has been the lowering of the solidifying point. The first method for accomplishing this was that of cold settling, a process in which the temperature of the oil was reduced and the wax separating at the temperature settled to the lower part of the tank. The most satisfactory results required weeks and sometimes months. The separation was hastened by the introduction of artificial cooling and the dilution of the oil with naphtha in the proportion of approximately 60 per cent heavy naphtha and 40 per cent oil. This modification enabled the refiner to produce the desired settling in three or four days to a week. The cold settled naphtha-oil mixture was withdrawn from the tanks and the naphtha recovered by distillation; the residue being the final product.

Improved methods of manufacture that have permitted the refiner to make higher quality lubricating oils have been introduced within the past 10 years. Some of the more important of these will be discussed.

Methods of Testing

The properties of lubricating oils are determined by means of several physical tests and a few chemical analyses. It may be of some assistance if the recognized tests be briefly mentioned.

Gravity—This is a hydrometer determination expressed in degrees A. P. I., and may be converted to specific gravity by means of standard tables. Gravity is no indication of quality but may serve to trace the source of the oil. The higher gravities suggest paraffin base oils.

Flash—The temperature at which gases or vapors from the heated oil will flash in the presence of a small flame.

Fire—The temperature at which the heated oil will ignite in the presence of a flame and continue to burn. The flash and fire points indicate a temperature above which the oil should not be used.

Pourpoint—This is the temperature at which the oil ceases to flow. It is of growing importance for showing the low temperature limits for satisfactory lubrication, and is of special value to the automotive, aircraft and refrigeration industries.

Viscosity—The rate at which a definite quantity of oil will flow through a standardized orifice at a specified temperature is measured in seconds and this number is called the viscosity. It is considered to be the most important property of a lubricating oil and indicates what may be expected of the oil film under service conditions. It does not signify oiliness.

Moisture — Excessive quantities of water will be indicated by the sputtering of the oil when making the flash test. A good lubricating oil should contain no water.

Color—Color is expressed by numbers, the low ones, such as 2 or 2½, indicating the lighter oils. Color alone is of little value, except to suggest the degree to which the oil has been refined.

Carbon Residue—The final carbonaceous residue remaining after an oil is heated under specified conditions in a crucible is known as the carbon residue. It is of considerable value as indicating good refining and what may be expected under high temperatures, especially in the internal combustion engine.

Reaction — A simple lubricating oil should have a neutral reaction. A compounded oil may have a small quantity of fatty acids but should be free from the mineral acids.

Sulphur—The total sulphur in a lubricating oil is determined by chemical analysis and is usually so low that the information is seldom required. A good lubricating oil will contain under 1 per cent total sulphur.

Emulsion— A knowledge of the extent to which an oil will emulsify with water is a guide when selecting oils that may come in contact with water while in use. It is usually expressed as the rate of time required for separation of a mixture of the oil and water.

Corrosion—A copper strip held in the hot oil, 212° F., for three hours should not become black or be corroded. The test is of value as a safety measure for the indication of objectionable sulphur compounds and acids.

Evaporation—The volatility of lubricating oil may be obtained by heating a known quantity for a definite time at a selected temperature and weighing the loss. A distillation test is to be preferred. The information may be of assistance when selecting an oil for high temperature conditions.

Saponification — The saponification value is used in determining the quantity of animal or vegetable oil present in a mixed oil. A pure mineral oil does not saponify.

Type of Crude Oil

The composition of each product that is obtained from petroleum is to a large extent contingent upon the type, of source, of the crude oil. The petroleum found in the eastern part of the United States contains a comparatively large quantity of wax and is known as paraffin base oil; the yield of lubricating oils is about 25 per cent of the crude. The heavy black oils, quite widely distributed, are called asphalt base oils; these may yield 40 per cent lubricating stock. A third type of oil, found in large quantities in the Mid-Continent district, contains both paraffin and asphalt and is known as mixed base petroleum. The yield of lubricating oil from the mixed base crude varies between 18 and 25 per cent. Refiners have perfected methods of separation and purification so that the type of the crude oil has little to do with the characteristics of the finished lubricating oil.

First suggested about 25 years ago for the refining of kerosene, the liquid sulphur dioxide method of Dr. L. Edeleanu has recently been introduced for the purification of lubricating oil. The conventional practice is to treat with concentrated sulphuric acid which produces large quantities of a troublesome sludge that is difficult to prepare for burning as a fuel or to make use of for any purpose. The final residue from the Edeleanu process is in a condition to be used as a good grade of fuel oil.

Sulphur dioxide under ordinary conditions of temperature and pressure is an irritating gas so familiar to everyone as the odor from the fumes of buring sulphur. When the gas is compressed at a low temperature it becomes a heavy yellowish liquid. The principle of the process is that the liquid sulphur dioxide is brought into intimate contact with the oil, which is held at a temperature of about 14° F., and dissolves such impurities as sulphur compounds, unsaturated bodies and the tars. After suitable agitation the mixture is permitted to stand until a separation is complete with the sulphur dioxide liquid, containing the impurities, at the bottom of the tank. The liquid is withdrawn, heated to cause the separation of the sulphur dioxide and obtain the fuel oil residue. The gas is cooled and compressed to be used over again. The upper layer of treated lubricating oil may then be filtered or given other treatment as may be desired.

Edeleanu discovered the important

(Continued on Page 149)

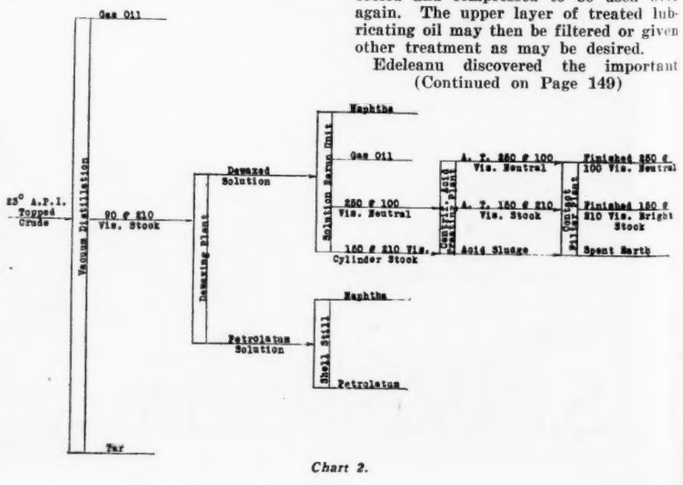


Chart 2.

Penberthy Quality

Penberthy Quality is not one of those things that have to be taken on faith.

It stands out plainly enough when Penberthy Products are compared in the stock room with the general run of steam specialties, liquid level gauges, and lubricating devices.

Penberthy Quality, however, is most emphatically demonstrated by the way Penberthy Products stand the gaff of service in the field.

If you are unfamiliar with the real Penberthy performance, specify these products in your next order. They are stocked by all leading supply houses.

PENBERTHY INJECTOR COMPANY

ESTABLISHED IN 1886

DETROIT

CANADIAN PLANT WINDSOR, ONT.

OWNERSHIP OF AJAX PIPE LINE CO. STILL A MATTER OF SPECULATION

The question as to the ultimate ownership of the Ajax Pipe Line Co. which is at work on the construction of a 10-inch line from Cushing or Glen Pool in Oklahoma to Wood River, Ill., is still agitating a large part of the industry, especially in the Mid-Continent area. Ford, Bacon & Davis, Inc., engineers of New York, are in charge of the work and have placed all orders for pumps and other equipment for the line. William von Phul, Jr., of Ford, Bacon & Davis, is the resident engineer, with headquarters at Springfield, Mo.

Officials of the Standard Oil Co. (New Jersey) have declined to comment on the new line, which fact has somewhat intensified the belief that that company is interested in its construction. Ford, Bacon & Davis have constructed a majority of the large natural gas lines in which the Jersey company has been interested, they having built the line from the Texas Panhandle to Denver; the line to St. Louis from Monroe, La.; the line to New Orleans and the line to Birmingham and Atlanta.

Oil men in the East, through a process of elimination, seem to have decided the Standard Oil Co. (New Jersey) is sponsor for the new line. They point out this company could easily keep the line, which will have a capacity of about 40,000 bbls. daily, running at capacity and claim such movement would be very little in excess of the quantity eight large tankers would move monthly from Gulf ports to Bayonne.

Officials of the Tide Water Oil Co. are said to have disclaimed any connection with the new line.

Officials of Ford, Bacon & Davis are officers of the Ajax Pipe Line Co., J. S. Towers, being president and Henry F. Storck, vice president.

As stated in the April 24 issue of The Oil and Gas Journal, refineries located at Wood River are those of the Shell Petroleum Corp., which has a 10-inch pipe line to Wood River from Cushing, Okla.; the Standard Oil Co. of Indiana, White Star Refining Co., and the Lubrite Refining Corp. The Illinois Pipe Line Co. has a line extending east from Wood River and the Tide Water Pipe Line Co. has a line extending from Stoy, Ill., northeast and east to the Atlantic Seaboard.

In connection with the construction of this line, it seems significant that the Phillips Petroleum Co. is said to have about completed plans for the construction of a large sized gasoline line from Amarillo, Tex., through Oklahoma and Tulsa and on to St. Louis.

As an example of the comment heard daily throughout the Mid-Continent, one oil company official said: "The Ajax Pipe Line Co. must be a Standard of New Jersey proposition. You know the New Jersey symbol on the big board is 'J.' Also that 'X' is the symbol of an unknown quantity. Hence the name 'Ajax' means 'A Standard of New Jersey unknown quantity.'"

THE OIL MAN'S CALENDAR

May 12-15—Atlantic City, N. J., annual meeting, National Fire Protection Association, Hotel Haddon Hall.

May 14—Milwaukee, Wis., meeting, Wisconsin Petroleum Association, Hotel Pfister.

May 19-20—San Antonio, Tex., National Oil Scouts Association of America.

May 20-22—Tulsa, annual meeting, Natural Gasoline Association of America, Mayo Hotel.

May 21-23—Los Angeles, Calif., National Foreign Trade Conference.

May 23-24—Tulsa, spring meeting, Mid-Continent section, A.P.I. Division of Production, Mayo Hotel.

May 23-24—Tulsa, Mid-Continent Oil Scouts and Land Men's Association.

May 25-29—French Lick Springs, Ind., summer meeting, Society of Automotive Engineers.

May 30—Indianapolis, Ind., annual 500-mile automobile race, Speedway.

June 4—Norman, Okla., Opening of Petroleum Engineering Field Course, University of Oklahoma.

June 12-13—Charleston, W. Va., annual convention, West Virginia Oil Marketers Association, Daniel Boone Hotel.

June 16-25—Berlin, Germany, World Power Conference.

June 23-26—San Francisco, Calif., convention, American Railway Association.

June 23-27—Atlantic City, N. J., annual meeting, American Society for Testing Materials.

September 2-4—Toronto, Ontario, North American Gas Tax Conference King Edward Hotel.

September 29-October 4—Pittsburgh, Pa., petroleum section, National Safety Council.

October 14-16—Kansas City, Mo., convention, Big Four State Jobbers.

Deep Sand Production In Reagan County From Lower Simpson

The age of the producing horizon in the deep wells in Reagan County, West Texas, which has heretofore been in doubt, is now determined as Ordovician. This conclusion is expressed in a short paper by B. H. Harlton on microfossils obtained from cuttings from these wells which is being published in the May issue of the Bulletin of the American Association of Petroleum Geologists. (Letter from Sidney Powers, April 17, 1930.) In addition, cores from depth 8,431 to 8,488 obtained early in April by Dr. H. P. Bybee contain microfossils which have been identified by Dr. E. O. Ulrich as representing Chazy, equivalent to a horizon well down in the Simpson. Fossils from this core were also submitted by J. E. Grant. From the formations above the Ordovician a considerable number of fusulinids are now being obtained by H. P. Bybee and H. A. Hemphill which will aid in an important way to our knowledge of these higher formations. A more detailed report on the fossils of the deep horizon is given in University of Texas Bulletin 3,001 now being printed. The lower Simpson is equivalent to part of the Marathon series of Texas.

Late Fields

CALIFORNIA

LOS ANGELES, Calif., May 6.—The Ohio Oil Co. finished its second producer in the Playa del Rey Field of Los Angeles flowing 1,440 bbls. of clean pipe line oil daily from 6,154 feet and while this project is approximately 45 feet higher structurally than the discovery well it does not materially enhance the value of the Recreation Gun Club property as far as ultimate production is concerned. As a matter of fact the Ohio's new producer has only about 8 feet of oil sand above the schist in which drilling was concluded. The Union Oil Co. picked up the shallow zone in its No. 1 Del Rey and has landed pipe at 3,464 feet with bottom of hole at 3,584 feet. This well has cored about 50 feet of oil sand and looks exceptionally good for production when a test is made next week. Up to the present time no well in this field has been able to produce the first zone and for this reason the Union's test will be watched closely especially since the sand was topped more than 200 feet higher than it was encountered in any other well in the field. The structural position of the Union's No. 1 Del Rey indicates that the Del Rey Field is south and east of the discovery well.

In the Elwood Field of Santa Barbara County the Barnsdall and Rio Grande finished No. 6 Doty flowing 1,500 bbls. daily and subsequently pinched back production to approximately 900 bbls. per day.

WEST TEXAS

FORT WORTH, Tex., May 6.—Laurel Oil & Gas Co.'s No. 1 Bigham, SW cor., Subdivision 31, Guadalupe County School Lands, Taylor County, approximately midway between two producing wildcats, encountered about a 15-bbl. showing of oil at 2,180 feet in the Noodle Creek pay horizon, and is now drilling deeper.

KANSAS

Aladdin Petroleum Co. and Phillips Petroleum Co.'s No. 1 Meffert, in Section 29-20-11, Lyons County, Kansas, is shut down with a hole full of water at a total depth of 2,389 feet. The failure is north of Bird, Hanley & Sheedy's well in Section 30-20-11. The Aladdin Petroleum Co. test had a showing of oil at 2,302-10 feet.

Harry Skelly and others' No. 1 Neufeldt, SE cor. NE NE Section 19-21-3w, southwest of the Voshell Pool, in McPherson County, was rigging up rotary tools. The test is semiwildcat 2½ miles southwest of production in the Voshell Pool.

Barnsdall Oil Co.'s No. 1 McCarty, in Section 31-25-17w, Edwards County, is pumping around 250 bbls. a day. The oil is being shipped in tank cars from a near by loading rack to the company's refinery in Wichita.

Empire Oil & Refining Co.'s No. 1 Dillion, NW cor. Section 36-13-15w, Russell County, a semiwildcat, 2 miles east of the Gorham Pool, had conglomerate at 3,300-06 feet, where oil rose 1,500 feet in the hole in a few hours. A production test will be made.

McBride Inc.'s No. 5 Voshell, SW cor. NE NE Section 9-21-3w, McPherson County, made 1,218 bbls. of oil and 141 bbls. of water from the Silicious lime at 3,335-44 feet. Same operators' No. 4 Voshell, NE cor. Section 9-21-3w, a twin, had Silicious lime at 3,370-79 feet, where it gauged 457 bbls.

Sinclair Oil & Gas Co.'s No. 1 Morehouse, SE cor. NE Section 4-21-3w, made 851 bbls. from the Wilcox sand on the gauge of May 4.

OKLAHOMA

In the Konawa Field in southern Seminole County, Oklahoma, Shell Petroleum Corp.'s No. 1 Ceasar, NW cor. SE SE Section 20-6-6, was drilled deeper in the pay horizon at 2,912-38 feet, and the well made 3,809 bbls. on the gauge of May 6.

Burke-Greis Oil Co.'s No. 1 Ceasar, NW cor. SW SW Section 21-6-6, made

(Continued on Page 195)

MAGNETIC STORM

Tucson, Ariz., observatory of the United States Coast and Geodetic Survey report that a severe magnetic storm started Sunday, May 4, at 3 p.m. Central Time and ended at 8 a.m. May 6. The telegram read:

"Storm began fourth twenty one Severe."

"Storm ended sixth fourteen."

High Spots in Field News

MISSISSIPPI

Well near Jackson showed a 20,000,000-foot initial before shut in.

SOUTHWEST TEXAS

Darst Creek's allowance increased to 20,000 bbls. Three new wells in Pettus Field.

KANSAS

Operators in new flush pools to increase output. Western wildcatting active.

OKLAHOMA

Production declines in Oklahoma. Big wells expand Oklahoma City Field but curtailment maintained. Seminole production smaller.

ROCKY MOUNTAIN AREA

Three new locations in Hobbs area, New Mexico. Half dozen wells started. Colorado wildcats close to objective. New tests in Wyoming.

NORTH TEXAS AND PANHANDLE

Gray County sends up Panhandle production with several good wells. Hartley County wildcat encounters gas. Young County and Cisco busy areas.

WEST TEXAS

Winkler County proration extended for six months and allowance cut to 80,000 bbls. Yates Pool shows small gain. Stocks in West Texas show drop in April. Penn Pool increases output. Small well in Irion County.

CALIFORNIA

Ohio Oil Co. finishes second producer at Playa del Rey flowing 1,440 bbls. Union Oil Co.'s No. 1 Del Rey has cored about 50 feet of oil sand. At Elwood Barnsdall and Rio Grande's No. 6 Doty flowed 1,500 bbls.

GULF COAST

Possible new salt dome at Danbury, Brazoria County. New tests at Refugio.

Two more good producers added in 3,700-foot sand at Refugio. Possible extension of 5,900-foot sand northeast.

SCORE CARD ON OIL PRODUCTION

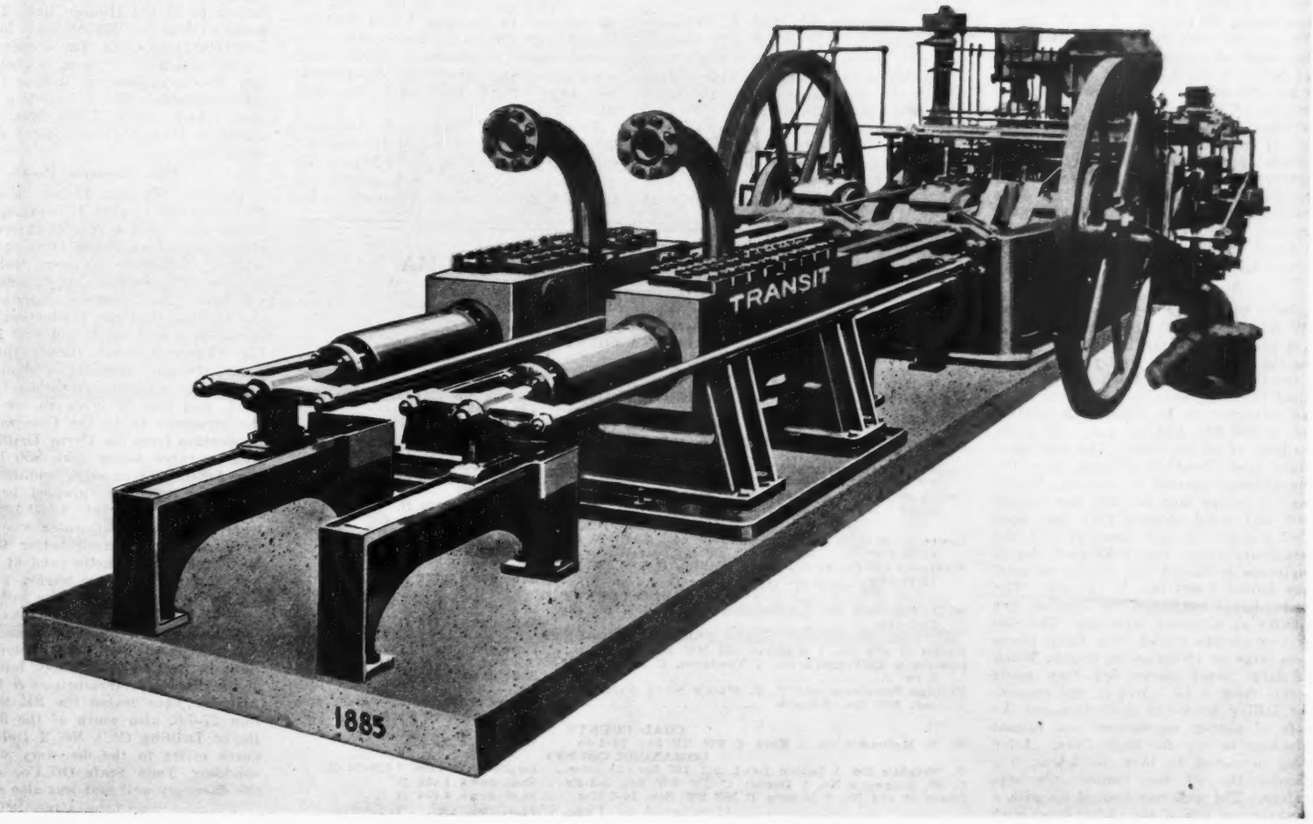
Below is shown allotted average daily production, April to December, inclusive, suggested by the Committee on Economics of the Federal Oil Conservation Board, and the actual average daily production during the past week:

	Alloted (bbls.)	Actual (bbls.)	Over (bbls.)	Under (bbls.)
California	610,000	630,500	20,500	.....
Oklahoma	655,000	657,970	2,970	.....
Texas	750,000	836,277	86,277	.....
All others	480,000	464,283	.....	15,717
Total	2,495,000	2,589,030	109,747	15,717

TRANSIT

The TRANSIT Cross Compound Crank and Fly-wheel Hot Oil Pump is so ideal that it bids fair to become very popular for hot oil pumping.

NATIONAL TRANSIT Pump & Machine Co.
Oil City, Pa.



Production Declines in Oklahoma

Big Wells Continue in Expanding Oklahoma City Field but Curtailment Maintained. Seminole's Smaller Output

By W. A. Spinney
Staff Correspondent, Oklahoma Fields

Oil production in Oklahoma shows a small decrease during the week ending May 3, when the gauge was 657,000 bbls. daily. Increases may be expected the coming week as all proration is off in six of the fields in the Seminole area. For the purpose of obtaining new potential gauges in the St. Louis, Maud, Mission, Carr City, Pearson and the old Earlsboro Pools, these districts were opened to their full flow on May 1 and will continue to flow wide open until May 16. The average daily production during this period will be the new potential for the last half of the month. Forty per cent of the potential will be allowed.

A new wildcat location was announced during the week 6 miles north of the Oklahoma City Pool. The wildcat test will be drilled by the Mid-Kansas Oil & Gas Co. and Ramsey Petroleum Co., 3 miles west of Edmond. The location is No. 1 Messer, SW cor., Section 32-14-3w, Oklahoma County. The test is on a block of about 3,500 acres recently assembled by the Ramsey Petroleum Co. Later the Mid-Kansas Oil & Gas Co. acquired a half interest. Unless paying production is encountered in the shallow sands the test will be drilled to the Silicious lime.

The wildcat test, 2½ miles south of the new location, the Prairie Oil & Gas Co. and Tom Slick Oil Co.'s No. 1 Dills, SE cor. NW, Section 17-13-3w, encountered a showing of oil and started to core at a total depth of 4,540 feet. The core was expected to be removed the next day.

The latest completion in the Oklahoma City Pool is the Indian Territory Illuminating Oil Co.'s No. 1 H. W. Jones, NW cor. SE SW, Section 1-11-3w. The total depth of the well is 6,505 feet. It was bailed down 2,500 feet and shut in on account of the wind blowing in the direction of buildings in the vicinity, the operators not wishing to shower mud and oil over the area. It was opened the next day for a production test and another huge producer was completed. The first hour's gauge was 1,220 bbls. The gas volume was estimated at 25,000,000 feet. The well made 13,129 bbls. in 12 hours. It is the largest producer in Section 1, in the north end of the pool.

An Unusual Blowout

Skelly Oil Co.'s No. 4 Hoopes, SE cor. NW NE, Section 31-11-3w, was brought onto production early in the week and was the most unusual well yet completed in the Oklahoma City Pool. After being bailed the well cleaned itself with what was estimated to be between 50,000,000 and 60,000,000 feet of gas. It made 500 bbls. of oil an hour. The well blew rotary mud about 10 minutes, then the bombardment started in earnest. Heavy slugs of rotary mud not like the regular mud, but solid chunks that had been dried out by the gas pressure and the momentum from the 6,400-foot depth. Engineers estimated the chunks of mud were hurled 1,800 feet in the air. The bombardment continued for another five minutes at different intervals. The size of these chunks varied from small pieces to as large as 18 inches in length. When the large sized pieces fell they made craters from 3 to 5 feet in the ground. The falling brick-like mud damaged the roofs of nearby warehouses and caused onlookers to run for their lives. After being permitted to blow for about five minutes the oil was turned into separators. The well was hooked up with a separator on top of the casing level with the derrick floor and connected to this were two 8-inch lead lines from the top of the separator to the separators on the lease. The well was allowed to flow in the regular way for 17 hours when a large chunk of mud blown perhaps from the bottom of the well carried away the top of the separator on the derrick floor. The separator had only 32 pounds pressure when the top was torn away. The well blew wild for a few minutes until the master gate was closed.

Extends the Field

The west edge of the Oklahoma City Pool was again proved by the completion of the Mid-Kansas Oil & Gas Co.'s No. 3 Mollman, extending the producing area one location west. No new locations were announced for the west side of the pool but the north end had several new locations on small tracts. On account of the atmospheric conditions the No. 3 Mollman was opened three different times during the day, and on each occasion blew large heads of mud into the slush pits. The first hour's gauge was 204 bbls. of oil, the second 189 bbls. and the first 12 hours it made 1,726 bbls. The gas volume was estimated at 15,000,000 feet. The oil was found in Simpson sand at 6,353-6,431 feet. Not only does the field continue to lengthen, north and south, but it is widening also. It is about 7 miles long and 2½ miles wide.

Companies are announcing new locations in twos and threes with the north end of the field getting the majority. Skelly Oil Co. announced new locations on a 15-acre tract in the north part of NE SW Section 2-11-3w. Anderson-Prichard Corp. made a new location, C N half SE NE NE Section 2-11-3w, in the Rosedale addition. In the south end of the field Prairie Oil & Gas Co. made locations on the Darks in SW Section 32-11-2w.

The completion of Hall & Briscoe's No. 1 Lindsey, NE cor. SE NW Section 14-11-3w, which extended the production in the field a half mile west with a good well in the sand horizon, has increased the activity in the area.

Ryan Consolidated Co.'s No. 1 Lawton, NE cor. NW Section 3-11-2w, a wildcat east of the Oklahoma City Pool, was shut down for a few days on account of an accident to the boiler. The wildcat test has resumed operations and was drilling at 6,480 feet.

The Coline Oil Co. has completed No. 8 Olds in C NW Section 24-11-3w as a gas well. It blew in and measured 70,000,000 feet of gas before cleaning out. The company desired gas as it was short of fuel and has been forced to purchase gas from other companies.

Salt water was found in the Tom Slick Oil Co.'s No. 1 Hussman, SW cor. NW SW Section 29-11-2w. The well is on the east edge of the field and has been drilling deeper. The new total depth of the well is 6,564 feet, where it made 425 bbls. on the gauge of May 1. Lead wool was used to plug off a few feet at the bottom of the hole. The production on the following day was 399 bbls. of oil.

Shell Petroleum Corp. has made a 1,200-bbl. producer out of No. 3 Petty, NE cor. Section 3-11-2w, which once looked like a failure. The well was deepened 4 feet in the Silicious lime to a total depth of 6,460 feet, where it doubled its production and is now making 50 bbls. an hour. The gas volume also increased to 10,000,000 feet.

The deepest drilling test in the Oklahoma City Pool is Tom Slick Oil Co.'s No. 1 Banta, SE cor. SW SE Section 18-11-2w, on the east side of the pool. The test cored a sandy lime at 7,460-67 feet, nothing showing, and was drilling deeper at 7,495 feet.

Phillips Petroleum Co. announced a new location in the Walnut Grove Addition, within five blocks of the M-K-T railroad station in Oklahoma City, it being the closest test to the heart of the city. The test is No. 1 Walnut Grove, in Block 5, in the NW Section 3-11-3w.

Friday, May 2, was the first day in several months that no new locations were announced. A number of operators were surveying tracts in the north end of the pool in Sections 1 and 2-11-3w. Recent heavy rains in the district have slowed down development work, since much of the area now under development lies adjacent to the north Canadian River bottom.

Tom Slick Oil Co. and Anderson-Prichard Oil Corp.'s No. 6 Hoopes, NE cor. SE NE, Section 31-11-3w, in the southeast part of the pool, caught fire the middle of the week, shortly after blowing in. The cement plugs had been drilled and some additional hole was made when the gas blew out unexpectedly, estimated at 180,000,000 feet. It was while an attempt was being made to kill the gas that the explosion and fire occurred. Connections were blown off at the mouth of the casing, steel striking the derrick causing sparks which ignited the large flow of gas, which quickly melted the derrick. The crew succeeded in closing the master gate putting the fire out. Indian Territory Illuminating Oil Co. has two other operations in the middle part of the pool that were bailing down. No. 1 E. Farley, SW cor. NW SW, Section 24-11-3w, was bailing at a total depth of 6,597 feet, in sand. No. 1 E. Border, NE cor. SE SE, Section 23-11-3w, was also showing signs of making oil while bailing the rotary mud.

Abandons Sunday Shutdown

The Carter Oil Co. announced during the week that it has abandoned its Sunday shutdown policy starting Sunday, May 4. The failure of other companies to join the movement in most areas was one of the main reasons. Production from the different areas in the State is being prorated and curtailment of production is being handled by proration agreements. The company advises it will continue the Sunday shutdown in districts where other companies are co-operating. In the older producing areas such as the Glen Pool, Cushing Pool, and the Burbank Pool, operations will be shut down over the week-end.

In Lincoln County

Magnolia Petroleum Co. is preparing to deepen its No. 2 Decker, SW cor. SE, Section 8-14-4, Lincoln County. This unusual well has made considerable oil at times, but has also gone dead three different times in the last few weeks. Its total depth is 4,675 feet, in what some believe to be the Hunton lime. The well made as high as 250 bbls. an hour and 7,500,000 feet of gas. The deeper producing formation in the area is about 5,000 feet. The most westerly well in the pool, same company's No. 2 Benedict, in Section 7-14-4, made 3,420 bbls. on the gauge of May 2, from a total depth of 5,076 feet.

New Wanette Pool

The new Wanette district in southern Pottawatomie County is creating considerable more than a passing interest from the oil operators. Payne Drilling Co. and Bullock drilled the discovery well in the SE cor. NE, Section 20-6-3, west of the old Asher Pool. Some geologists express the opinion that the production is coming from a new sand, and that it is not the Cromwell sand. Those that have tested the new Wanette sand disclose it as entirely different from the Cromwell sand, and that it is found too low on the structure to be the Cromwell sand. Production from the Payne Drilling Co.'s well averaged better than 850 bbls. per day for the seven days ending May 2. Since the well was plugged back from the Wilcox sand at 4,130-4,201 feet, where a hole full of water was encountered, it has averaged better than 800 bbls. from the Wanette sand at 3,505-10 feet, for the last three weeks.

Two new operators have entered the area by purchasing acreage sowthwest of the discovery well. Tom Slick Oil Co. has purchased 360 acres from W. A. Ball, in Section 34-6-3, 1½ miles south of the discovery. Westheimer & Daube of Ardmore have leased the SE SW, Section 27-6-3, also south of the discovery. Payne Drilling Co.'s No. 2 Bullock, the north offset to the discovery well, was spudding. Twin State Oil Co. offsetting the discovery well east was also spudding.

(Continued on Page 168)

WILDCAT OPERATIONS IN OKLAHOMA

(Descriptions are East and North unless marked otherwise)

NORTHERN OKLAHOMA

ALFALFA COUNTY

Company, farm and location—	Remarks:
Smith Brothers' No. 1 Forbes, SE cor. NW NW Sec. 12-27-11w	Shut down 1,232 ft.
J. W. Bailey's No. 1 Acre, SW cor. NE Sec. 14-24-11w	Rigging up standard tools 4,660 ft.; cleaning out.

BECKHAM COUNTY

Ray Johnson and J. R. Cuniff's No. 1 Brower, C NW Sec. 29-10-22w	Rig.
Producers Exploration Co.'s No. 1 Seidell, SE cor. SW SW Sec. 17-9-22w	Shut down 2,402 ft.
Carson et al's No. 1 Danby, SW cor. SE NE Sec. 20-8-22w	Shut down 1,575 ft.

BLAINE COUNTY

Lowen et al's No. 1 Unknown, NW cor. SW NW Sec. 17-16-11w	Spudded and shut down.
Washoma Oil Co. et al's No. 1 Phillips, C NW SW Sec. 12-19-10w	Shut down 2,935 ft.

CADDO COUNTY

W. J. Hartley's No. 1 Galbreath, SE cor. NW SE Sec. 29-5-12w	Shut down 3,394 ft.

CLEVELAND COUNTY

Harris et al's No. 1 Highbee, SE NW Sec. 20-6-1	Drlg. 5,460 ft.
Daniels & LeWright's No. 1 Vandever, C SW Sec. 15-7-1w	Shut down 3,130 ft.
Phillips Petroleum and T. B. Slick's No. 1 Sudick, NE cor. NE Sec. 8-10-2w	Wilcox 7,716-20 ft., water; plugging back to 5,000 ft. to test.

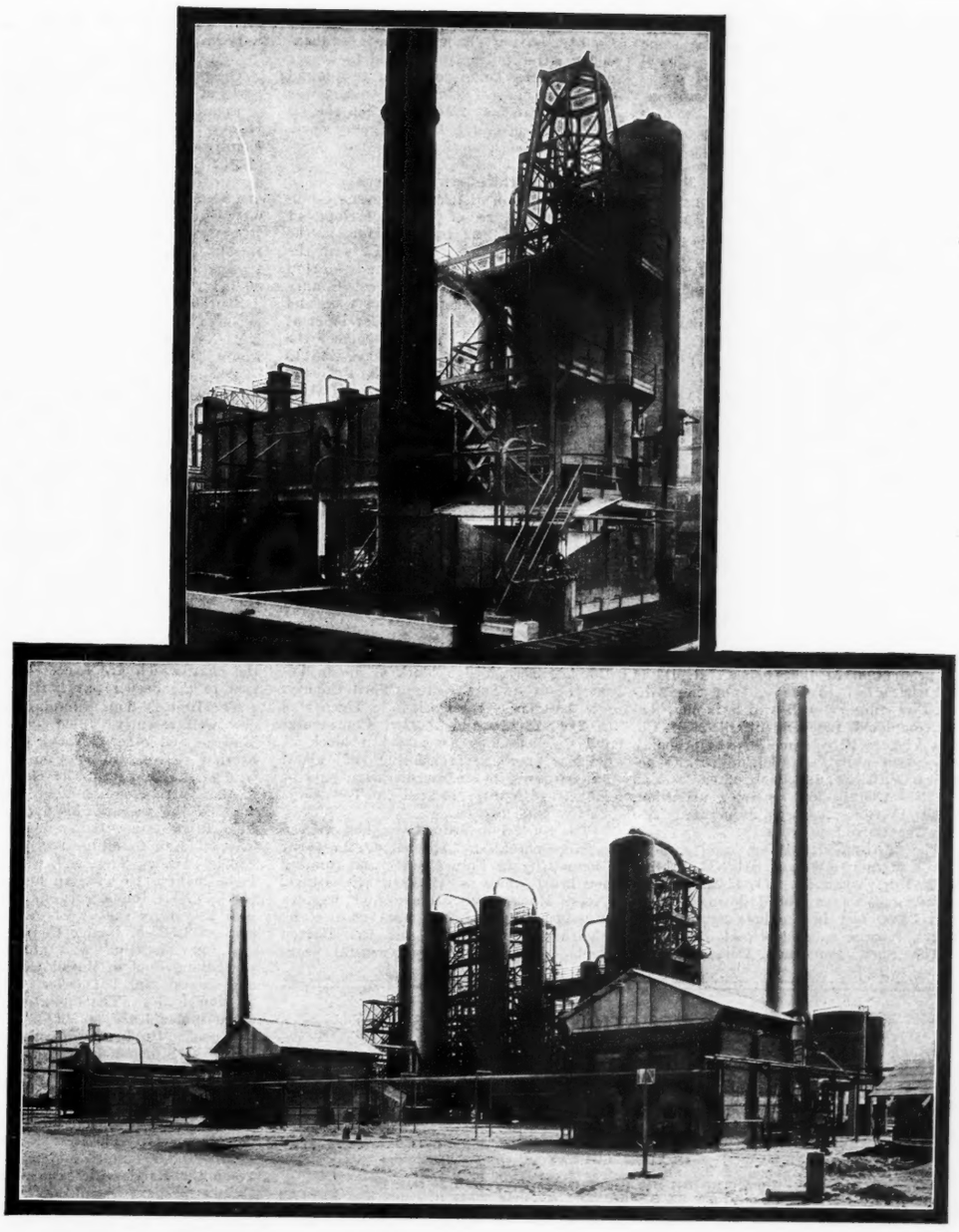
COAL COUNTY

W. E. McGraw's No. 1 King, C SW NE Sec. 11-1-8e	Drlg. 2,975 ft.

COMANCHE COUNTY

V. Wright's No. 1 Indian Land, SE SW Sec. 29-2-9w	Swabbed 15 bbls. 1,929-34 ft.
G. W. Stogner's No. 1 Doebel, C SW SW Sec. 3-3-9w	Shut down 1,460 ft.
Green et al's No. 1 Wilson, C NE SW Sec. 14-1-12w	Shut down 4,055 ft.

(Continued on Page 159)



SONS COMPANY

TULSA HOUSTON BOSTON

Kansas Due for Higher Production

Operators in New Flush Pools Decide to Increase Output of Their Leases. New Pipe Line Outlet. Western Wildcatting

By W. A. Spinney
Staff Correspondent, Kansas Fields

Wildcat activity in the western part of Kansas is increasing, the majority of new operations on the reports for the week ending May 3 being in that part of the State.

The State's production is holding steadily, the total daily average for the same seven days being 125,100 bbls. With new potentials in the two pools in McPherson County the State's production may show an increase. The Voshell Pool, in McPherson County, has an estimated potential of 55,000 bbls. and an allowed production of 50 per cent. The daily average production from the area has been considerably under the allowed production on account of the limited pipe line capacity. The production in the Ritz Pool was increased May 1 to approximately 5,000 bbls. a day.

The permitted oil production in the Ritz Pool was increased May 1. On that date wells were wide open to determine new potentials. Operators have agreed to increase production from 50 bbls. per well to 50 per cent of the potential yield. Some of the old producing wells had a large initial production. One made 600 bbls. an hour. Some operators believed the rigid restrictions in force in the area might injure the wells and agreed to increase the production. Operators holding the majority of acreage in the area are the Shell Petroleum Corp. The Texas Company, Dixie Oil Co. and Amerada Petroleum Corp. The estimated potential output of the pool is 10,000 bbls. a day. A swabbing test shows the production to be 9,802 bbls. Some of the wells were swabbed less than 24 hours. The new potential gauges on May 1, by different companies, were as follows:

Company, lease—	Well No.	Bbls.
Dixie:		
Flook	1	510
Flook	2	1,310
Shell:		
Miller	1	4,070
Ritz	1	780
Ritz	2	238
Ritz	3	470
Koehn (Sec. 36)	1	295
Koehn (Sec. 16)	1	*695
Holmes	1	170
Texas:		
Munn	1	1,267
Total	10	9,802

*16 hours.

The Shell Petroleum Corp.'s No. 1 Miller is still the largest producer in Kansas with a potential of 4,070 bbls. in 24 hours. Some of the wells in the area are making water as follows: Shell Petroleum Corp.'s No. 1 Ritz made 510 bbls. of water; No. 2 Ritz, 240 bbls. of water; No. 3 Ritz made 15 bbls. of water.

The production in the pool is prorated on a basis of 50 per cent of the potential and it will be allowed to make approximately 5,000 bbls. a day. Mid-Kansas Oil & Gas Co.'s No. 1 Pitts, in Section 2-19-2w, 6 miles north of the Ritz Pool, in McPherson County, made 150 bbls. of oil and 75 bbls. of water on the pump from the chat at 2,900 feet.

The allowed production in the Voshell Pool in McPherson County is expected to be increased when the Skelly Oil Co. completes the new 4-inch pipe line to the area. The pipe line capacity in the pool is now 15,000 bbls. a day and the new line will increase the capacity to about 21,000 bbls. a day. McBride Inc.'s No. 4 in the NE cor., Section 9-21-3w, a twin to the discovery well in the pool, swabbed 720 bbls. in 18 hours from the Silicious lime at 3,370-79 feet.

The wildcat test of Helmerich & Payne in Section 23-21-3w, McPherson County, encountered a showing of oil in the Viola lime at 3,415 feet. A production test will be made. The test is about a mile south of the Voshell Pool in the same county. It was drilling deeper at 3,450 feet on the last reports.

Kansas fields had 29 new operations for the week ending May 3. Twenty-two of these new operations were in the western part of the State, Morton County, in the extreme southwestern part, reported nine new locations, all by the same company. The new operations were in Morton, Stevens, McPherson, Sumner, Russell, Rice and Butler Counties.

Rice County Activity

The Schurr Pool in Rice County is expected to be a busy spot during the summer according to all indications. Operators in the area predict by midsummer a score of tests may be drilling in the main part of the pool and an equal number on the edges and in adjacent areas. Only a few are drilling now, but Rice County in a few weeks is expected to be second to McPherson County in the number of drilling tests. On June 1 the present proration agreement will end. It is believed that operators interested in the area, who have given the curtailment plans the fullest co-operation in the past, will expect to take steps in the development of the different properties. All the present producing wells are curtailed to 50 bbls. a day. They have a potential yield of 700 to 1,800 bbls. a day. Within the next 30 days the Aladdin Petroleum Corp. has a lease it must validate by starting a test well a half mile south of production in the pool. C. B. Davis has the offset to the east of the Allison-Fitzwilliam's well which is now being completed. Independent Oil & Gas Co. and Vickers Petroleum Co. will probably start two wells. In addition to the activity in the Schurr Pool, other sections in Rice County are receiving attention, Shell Petroleum Corp. announced two new locations last week.

The Allison-Fitzwilliam and others' No. 1 Mezger, SW cor. SE NE, Section 21-20-10w, swabbed 269 bbls. in five hours, and was swabbed down. The oil rose 3,000 feet in the hole again in 12 hours, from a total depth of 3,373 feet.

The Shell Petroleum Corp.'s No. 2 Haury, in Section 11-23-2w, Harvey County, is shut down and may be abandoned, after failing to respond to deeper drilling, after going dead. The test found oil in the chat at 2,983 feet, and it was then estimated at 250 bbls. when the oil was first encountered, later going dead. The total depth of the test is now 3,009 feet.

Southwestern Gas Area

The Hugoton district in Stevens County, is the scene of much development with other drilling tests in Morton, the next county to the west. Activity in the new gas area of Stevens and Morton Counties is unusual. In Stevens County 15 wildcat operations are under way, and Morton County has 9. The development has become general in the area since the announcement of the new pipe line to the north. The area now has about 20 completed gas wells with a potential of 200,000,000 feet of gas. Some of the drilling wells now showing gas in Stevens County are, Argus Production Co.'s No. 1 Armstrong, CNL S half NW, Section 16-34-39w, making 10,000,000 feet, from a total depth of 2,682 feet; same company's No. 1 Smith, C SW, Section 13-33-37w, Stevens County, making 5,000,000 feet, from a total depth of 2,680 feet; No. 1 Ramey, C SW, Section 1-33-38w, Stevens County, making 8,000,000 feet from a total depth of 2,786 feet.

Leasing in the West

Leasing of acreage in the western counties continues. Sinclair Oil & Gas Co. has assembled a block of about 35,000 acres in northeastern Ford County. The location of the block is in Townships 25-21w, 26-22w and 27-23w. Continental Oil Co. has also assembled a block of wildcat acreage consisting of about 15,000 acres in the southwestern part of Edwards County, located in Townships 25-19w and 26-20w.

The Shell Petroleum Corp. has secured a large checkboard spread starting near Dodge City in Ford County and running northeast through Hodgeman, Pawnee, Nees, Rush, Ellis, Trego and western Russell Counties. The area covered by the acreage is known as the Barton arch, which was mapped several years ago by the United States Geological Survey.

In the Older Areas

The pay horizon in the Patterson Pool, north of Hamilton in Greenwood County, is apparently pinching out to the east. However, it may extend to the south. Empire Oil & Refining Co.'s No. 2 Nesbit, CSL NW NW Section 6-24-12, was dry in the Bartlesville sand at 1,858 feet, and found a hole full of water at 1,925-60 feet, where it is being abandoned. Directly south, Syndicate Corp.'s No. 4 Shook is apparently on the east edge. Production of the well is estimated at 30 bbls.

Southwest of Madison the wildcat of O'Neil and others' No. 1 Hess, NW cor. NE NW Section 34-22-11, Greenwood County, was improved by the second shot of 200 quarts, when it swabbed 80 bbls. in 16 hours after the shot. Oil was found in Bartlesville sand at 1,880-1,933 feet. Previous to the second shot the well was making 25 bbls.

Another well was completed on the Greenwich Townsite in Sedgwick County. After failing to make a producer in the chat horizon at 2,900 feet, the test was drilled deeper to the Viola lime at 3,220 feet. The well was drilled by E. F. Jones and others on a small tract in Section 15-26-2, Sedgwick County, on the southeast edge of the townsite. The well made 400 bbls. of oil the first 20 hours. The Shell Petroleum Corp. has several wells in the area producing from the chat which are expected to be carried to the deeper pay horizon.

The first 20-hour pumping test of the new well recently drilled by Sullivan & Melrose and others, No. 1 Gelwicks, in Section 6-27-4, Butler County, a semi-wildcat, northwest of the old production in the North Augusta Pool, and 3 miles west of the recently discovered Aladdin Pool, in the same county, made 380 bbls. The oil was found in a sandy lime at 2,924-27 feet. The well was estimated to be making 15 bbls. an hour after the test. T. C. Johnson is starting a new well 2½ miles southwest of the well in Section 12-27-3, Butler County.

A new location was announced for the Elbing Pool in Butler County. Noble and Jones' No. 1 Oursler, C SW NE, Section 4-23-4. The operators have 160 acres under lease on the north side of the pool. Production in the Elbing is found in Silicious lime from 2,000-2,400 feet.

The National Refining Co.'s No. 1 Snively, C NW SW, Section 25-23-6, Butler County wildcat, was shut down at 2,365 feet. The test is on a block of about 8,000 acres and is expected to reach the Bartlesville sand around 2,550 feet in the next few days.

In the Rainbow Bend district in Cowley County, McKnab-Bess Co. has completed a pair of wells on the east edge of the pool. No. 1 A. Johnson, in Section 21-33-3, made 45 bbls. of oil the first 24 hours and No. 1 B. Johnson in Section 29-33-3, swabbed 32 bbls. in nine hours. Both wells are producing from the Bartlesville sand at 3,265-98 feet.

Butler County

Empire Oil & Refining Co. has the rig up for No. 98 Koogler, SW cor. SE NW, Section 19-26-5. Location has been staked for No. 1 Fountain, NE cor. SW, Section 28-26-6. Johnson and others made location for No. 1 Heath, NE cor. SE, Section 12-27-3. Ramsey and others' location has been made for No. 2 Lehman, NW cor. SW SW, Section 35-28-6. Garden and others' No. 1 Shuss "A," SE cor. SW NE, Section 6-27-6, has been deepened from 2,727 feet to

(Continued on Page 167)

WILDCAT OPERATIONS IN KANSAS

(Descriptions are East unless otherwise marked)

Company, farm and location—	Remarks:
BARBER COUNTY	
Skelly Oil Co.'s No. 1 Temple Ranch, SW NE Sec. 13-34-15w	Casing trouble 5,241-46 ft.
Phillips Pet. Co.'s No. 1 Powell, SE cor. SE Sec. 11-32-10w	Shut down 4,023 ft.
BUTLER COUNTY	
Elam et al's No. 1 Hopkins, SE SW SE Sec. 26-23-4	Drlg. 450 ft.
Joe Liggett's No. 1 Guanther, C SE NE NW Sec. 29-26-7	Shut down 50 ft.
Martin et al's No. 1 Flanigan, C SW SE SW Sec. 29-27-3	Drlg. 3,080 ft.
CHASE COUNTY	
Transcontinental & Cheney's No. 1 Wassel, NE SE Sec. 36-20-9	Drlg. 2,290 ft.
Urschell et al's No. 1 Lippa, C SW SW Sec. 27-18-6	Shut down 1,990 ft.
Steinbuckel et al's No. 1 Stephenson, NE SW Sec. 4-20-6	Drlg. 1,635 ft.
Steinbuckel et al's No. 1 Cook, SE cor. Sec. 21-19-8	Drlg. 2,560 ft.
CHAUTAUQUA COUNTY	
Valentine Oil Co.'s No. 1 Patterson, NW SE SW Sec. 2-32-9	Drlg. 1,690 ft.
CLAY COUNTY	
Chrisler et al's No. 1 Tivier, SW cor. Sec. 19-8-3	Shut down 50 ft.
COFFEY COUNTY	
Kimsay's No. 1 Baker, SE cor. Sec. 24-22-13	Shut down 50 ft.
COWLEY COUNTY	
Roth & Faurot's No. 1 Adams, C SW NE NE Sec. 19-32-8	Drlg. 1,825 ft.
Prairie O. & G. Co.'s No. 1 Dosbaugh, SE cor. Lot 27, Sec. 18-32-8	Shut down 2,882 ft.
DICKINSON COUNTY	
Emery-Curtis & Bryan's No. 1 Hevner, NW SE Sec. 31-13-3	Drlg. 2,283 ft.
Cross' No. 1 Sanden, NE cor. Sec. 12-15-2	Rig.
Hiatt & Durham's No. 1 Wendt, NW cor. Sec. 17-16-2	Spudding.
Kruger et al's No. 1 Diche, C NW NE NE Sec. 17-13-4	Shut down 2,935-43 ft.; water.
E. N. Morgan's No. 1 Whithair, NW SE Sec. 9-12-1	Shut down 1,768 ft.
DOUGLAS COUNTY	
Steinbuckel's No. 1 Unknown, SW NE NW Sec. 34-14-21	Drlg. 880 ft.
Jenkins & Scott's No. 1 Haden, SE NW Sec. 10-12-17	Drlg. 1,800 ft.

(Continued on Page 160)

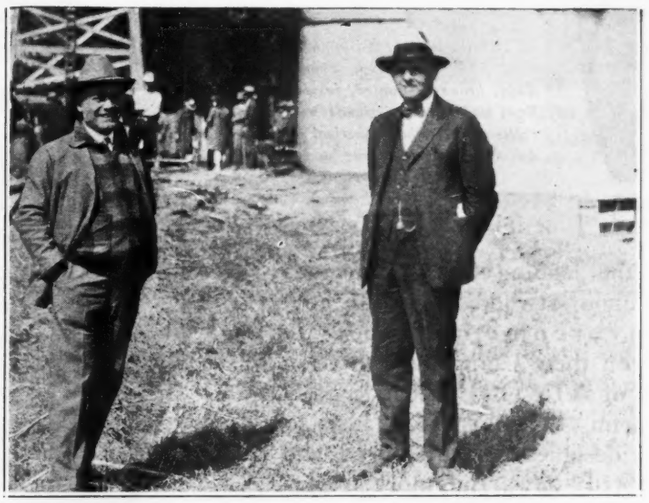
Mississippi Field Has Another Gasser

Well Near Jackson Showed a 20,000,000-Foot Initial Production Before It Was Shut In. Older Fields Quiet

By D. H. Bancroft
Staff Correspondent, Louisiana-Arkansas

SHREVEPORT, La., May 5.—Completion this week of Love Oil & Gas Co.'s No. 1 Mendoza in Section 11-5-1e, Hinds County, Mississippi, just outside the city of Jackson, with an estimated 28,500,000 feet of dry gas, total depth 2,446 feet in 1 foot of chalk increased interest and attention to what is going on in Mississippi, which wildcat territory has been very much in the limelight for the last three weeks. It was about the only "hot" development of the week in this division, neither the Zwolle nor Carterville districts in Louisiana having much beyond routine. The prospective Holly Field of DeSoto Parish, Louisiana, where R. O. Roy has a 1,200-bbl. producer has several more locations in the face of a salt water test by the Arkansas Fuel Oil Co. In all there were 37 new locations and 24 completions in the division as a whole, contrasted with 29 completions and an equal number of new operations the week before. Seventeen of this week's new operations were in wildcat territory.

Beside being the best of the three gas wells on the Jackson anticline the Love well is the largest and best return any Mississippi test has yet made in the years the state has been prospected. It is three-quarters of a mile north of Gulf Refining Co.'s Rainey well in Section 13-5-1e, which made 10,000,000 feet of gas and 20,000 bbls. of salt water with a trace of heavy oil from 2,520 feet and is deepening, and an equal distance south of Jackson Oil & Gas Co.'s No. 1 Mays, Section 2-5-1e, which made 2,000,000 feet of gas with plenty of salt water from 2,480 feet. The Love well shows 1,000 pounds rock pressure. It was shut in following the test. The hole is reported in good condition. Prior to its completion the best well in Mississippi was the Amory discovery well of October, 1926, Amory Petroleum Co.'s No. 1 Carter, Section 7-13-17, Monroe County. Located in the northeastern part of the state, whereas Jackson is in the middle of the state and many miles southwest of Amory, this first commercial well in the State made a reported 5,000,000 feet of gas from 2,470 feet total depth, but is said with some authority to have been closer to 16,000,000 feet. As it has been supplying the town of Amory with fuel ever since, the latter estimate seems reasonable. The second well in the State, No. 2 on the same lease was completed two years later for 1,000,000 feet of gas from 2,592 feet.



Why shouldn't the gentleman on the left, R. O. Roy, smile? When the picture was taken the well in the background, his No. 1-E Farmer, had just been completed flowing at the rate of 2,500 bbls. daily. It was a rank wildcat in Section 5-13-15, DeSoto Parish, and the discovery well of the second pool Roy has uncovered in North Louisiana, the first having been the prolific Bellevue shallow field in Bossier Parish. With him is W. H. Farmer, Mansfield banker and fee owner of the land on which the well is located.

As the result of the Jackson Oil & Gas Co., and Gulf Refining Co. wells, 13 other operations have got under way in the Jackson area, two more having been on the records for some time. Seven more operations, five in Hinds County and two in Rankin were written off as failures during the last two years.

The effect on Zwolle production of two wells in that field going dead early in the week showed in the week's daily average pipe line runs, in which it appears runs from Zwolle dropped 2,160 bbls., or almost 50 per cent. Runs from Roy's discovery well in the Holly district which is flowing through a 1-inch choke also dropped, its daily average of 915 bbls. being 135 bbls. less than last week. With five exceptions all of the 23 producing areas in the division showed declines ranging from 10 or 15 bbls. up, though most decreases were under 50 bbls. DeSoto-Red River with 1,030 bbls., Sarepta-Carterville with 340 bbls. and Urbana with 300 bbls. were the only fields showing increased runs and Caddo heavy, Homer and Lisbon showed no change, while Mount Holly with a 5-bbl. increase was practically stationary. Of the total daily average of 98,935 bbls. Louisiana runs were 40,885 bbls., a decline of 1,095, and Arkansas' 58,050 bbls. was an increase of 125 bbls. Daily average runs from the several pools were:

NORTH LOUISIANA	
Caddo, light	9,940
Caddo, heavy	2,860
Homer	3,420
Hayneaville	4,465
DeSoto-Red River	4,125
Elm Grove	415
Bellevue	620
Cotton Valley	2,100
Urania	5,200
Pleasant Hill	665
Sarepta-Carterville	3,220
Zwolle	2,940
Holly	915
Total	40,885
Last week	41,980
Decrease	1,095
ARKANSAS	
El Dorado	3,960
Smackover, light	5,255
Smackover, heavy	40,245
Stephens	950
Nevada County	830
Lisbon	1,010
Champagnolle	4,580
Bradley	80
Mount Holly	140
Urbana	1,000
Total	58,050
Last week	57,925
Increase	125
Both states	98,935
Last week	99,905
Decrease	970

Four Carterville Completions

Of four Carterville completions one, Olsan Brothers & Ingalls' No. 1 Roberson, Section 25-23-12, was abandoned as a location and the other three were small pumers. Arkansas Fuel Oil Co.'s No. 4 Peyton, Section 30-23-11, made 30 bbls. from 3,161 feet; Goodman & Johnson's No. 1 Martin, Section 26-23-12, was good for only 5 bbls. from 3,169 feet and The Texas Company's No. 7 Peyton, Section 30-23-11, flowed through 2-inch tubing at 56 bbls., total depth 3,153 feet. Locations were made for two new wells. There were no completions in Caddo fields but Triangle Drilling Co. got a show of oil at 2,100 feet in No. 1 Hardey, Section 18-19-16, a rank wildcat, several

(Continued on Page 122)

WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

NORTH LOUISIANA

AVOYLLES PARISH

Company, farm and location— Remarks—
E. E. Tippett's No. 1 Chateline, NE NE, Sec. 34-1n-3e... Drlg. 1,600 ft.

BIENVILLE PARISH

W. A. Nichols et al's No. 1 McDermontt, 660 ft. S, 660 ft. W, NE cor. NE NE, Sec. 28-18-6 ..... Tested dry 2,050 ft; drlg.

BOSSIER PARISH

Andrews & Davlin's No. 1 Nattin, 100 ft. N, 250 ft. W, C, Sec. 15-22-14 ..... Began drlg. Apr. 26; cmtd. 10-in. 84 ft; drlg. 280 ft.
Reid Clark et al's No. 1 Bollinger, SE cor. NW NW, Sec. 21-22-11 ..... Location.
C. H. French's No. 1 Biedenharn, Sec. 23-21-14..... Began drlg. Apr. 26; cmtd. 10-in. 42 ft; drlg. 410 ft.
La. G. & F. Co.'s No. 1 Crystal Oil Ref. Co., 66 ft. N, 1,320 ft. W, SE cor. SW SE, Sec. 7-21-11..... Began drlg. Apr. 27; drlg. 200 ft.
H. I. Morgan's No. 4 Wetherbee, 125 ft. W, 200 ft. S, NE cor. SW SE, Sec. 21-19-11..... Drlg. 1,520 ft.
Walker et al's No. 1 Antrim, NW cor. SE, Sec. 28-22-13.. S.D. 3,184 ft.

CADDO PARISH

Magnolia Pet. Co.'s No. 1 Swann, 330 ft. N, 380 ft. W, SE cor. NE SW, Sec. 16-21-14 ..... Set liner; bailing to test; T.D. 1,580 ft.
L. B. Mawk's No. 1 Swann, 440 ft. N, 200 ft. E, SW cor., Sec. 23-21-14 ..... S.D. for fuel; T.D. 700 ft.
R. W. Norton's No. 1 Hill, 630 ft. N, 1,260 ft. W, SE cor. NE, Sec. 33-23-16 ..... Cored shale 4,620 ft.
I. N. Pharis, trustee's No. 1 Oden, NE cor. SE NE, Sec. 16-19-14 ..... S.D. 2,322 ft; topped sand at 2,396 ft; set 6⅝-in; T.D. 2,409 ft.
C. W. Robinson's No. 1 Wilson, 990 ft. S, 330 ft. W, NE cor. SE, Sec. 2-15-16 ..... Drlg. 3,075 ft.
Triangle Drlg. Co.'s No. 1 Hardy et al, 660 ft. N, 660 ft. W, SE cor. fractional Sec. 18-19-16 ..... Drlg. 2,090 ft.

CATAHOULA PARISH

National O. & G. Co.'s No. 1 Kirkland, 585 ft. E, 495 ft. N, SW cor., Sec. 35-9-1n ..... Rig up.

(Continued on Page 224)

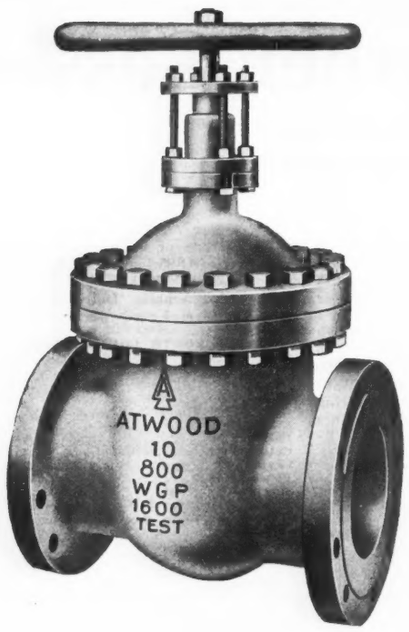
LOUISIANA-ARKANSAS PROVEN AREAS

NORTH LOUISIANA

BOSSIER PARISH—CARTERVILLE

Company, farm and location— Remarks—
Ark. Fuel Oil Co.'s No. 2-A Barnett, 330 ft. N, 330 ft. W, SE cor. W½ SE SE, Sec. 25-23-12..... Derrick.
Ark. Fuel Oil Co.'s No. 1-B Barnett, 290 ft. S, 300 ft. E, NW cor. NW NE, Sec. 36-23-12..... Swing. to test; T.D. 3,161 ft.
Ark. Fuel Oil Co.'s No. 2-B Barnett, 330 ft. N, 330 ft. W, SE cor. NW NE, Sec. 26-23-12 ..... Rig up.
Ark. Fuel Oil Co.'s No. 3 Bollinger, 1,024 ft. S, 375 ft. W, NE cor. Lot 26, Sec. 38-23-12..... Cored shale 3,378 ft.
Ark. Fuel Oil Co.'s No. 4 Bollinger, 330 ft. N, 330 ft. W, SE cor. Lot 14, Sec. 28-23-11..... Cmtd. 6⅝-in. 3,262 ft.
Ark. Fuel Oil Co.'s No. 3-A Kilgore, 330 ft. S, 235 ft. E, NW cor. SE SW, Sec. 30-23-11..... Cmtd. 6⅝-in. 3,112 ft; T.D. 3,135 ft.
Ark. Fuel Oil Co.'s No. 4-A Kilgore, 100 ft. N, 1,330 ft. E, SW cor. SE SW, Sec. 30-23-11..... Cmtd. 6⅝-in. 3,109 ft; T.D. 3,133 ft.
Ark. Fuel Oil Co.'s No. 4-B Kilgore, 200 ft. N, 300 ft. E, SW cor. NE NW, Sec. 31-23-11..... Cmtd. 6⅝-in. 3,168 ft.
Ark. Fuel Oil Co.'s No. 5-B Kilgore, 330 ft. N, 957 ft. E, SW cor. NE NW, Sec. 31-23-11..... Cmtd. 6⅝-in. 3,130 ft.
Ark. Fuel Oil Co.'s No. 6-B Kilgore, 330 ft. S, 330 ft. E, NW cor. NE NW, Sec. 31-23-11..... Began drlg. Apr. 28; cmtd. 10-in. 241 ft.
Ark. Fuel Oil Co.'s No. 7-B Kilgore, 330 ft. S, 990 ft. E, NW cor. NE NW, Sec. 31-23-11..... Rig up.
Ark. Fuel Oil Co.'s No. 8-B Kilgore, 330 ft. N, 1,520 ft. E, SW cor. NE NW, Sec. 31-23-11..... Derrick.
Ark. Fuel Oil Co.'s No. 9-B Kilgore, 330 ft. S, 1,650 ft. E, NW cor. NE NW, Sec. 31-23-11..... Location.
Ark. Fuel Oil Co.'s (formerly Muslow Oil Co.'s) No. 1 Mark Myer, 1,980 ft. N, 330 ft. W, SE cor., Sec. 36-23-12 ..... Arranging to deepen; T.D. 3,088 ft.
Ark. Fuel Oil Co.'s (formerly Muslow Oil Co.'s) No. 3 Peyton, Sec. 30-23-11 ..... T.A. 3,285 ft.
Ark. Fuel Oil Co.'s (formerly Muslow Oil Co.'s) No. 1 Floyd, 990 ft. S, 330 ft. W, C, Sec. 25-23-12..... W.O.S.R. 3,176 ft.

(Continued on Page 221)



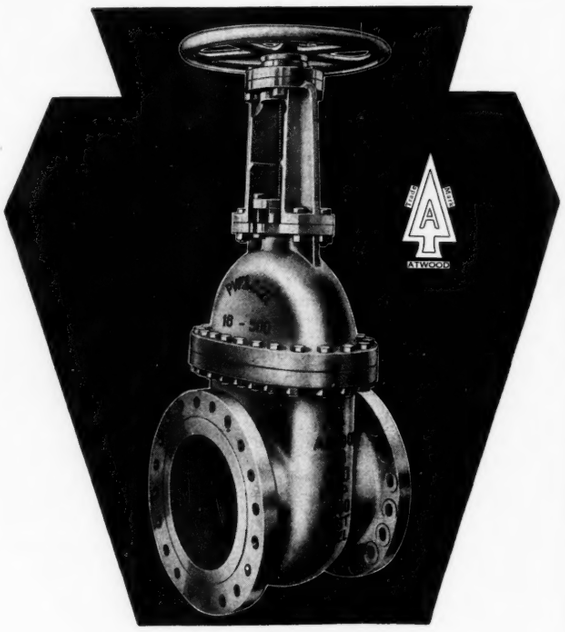
10" 800-lb. W.P., 1,600-lb. hydrostatic test, ATWOOD High Tensile Iron Body, bronze mounted, inside screw. Body and bonnet designed so that all sections are either spherical or cylindrical in shape, having a male and female bonnet joint.

ATWOOD Equipment fo

ATWOOD Electric Steel and High Tensile Iron Gate Valves

ONE of the leading GAS companies called upon Atwood Service to help them overcome inefficiencies in valves on their Compressor Station lines. A valve, of ATWOOD Electric Steel and Bronze trim (as illustrated just to the right) was designed, manufactured and shipped in ten (10) days. But more important than the fast-stepping helpfulness of ATWOOD Service, the valve fully answered the purpose for which it was designed . . . to the complete satisfaction of the customer. This is but one of hundreds of cases on which this company has been called in . . . and the problem solved.

Founders' experience of more than a century is cast into ATWOOD valve body, so specify ATWOOD and make certain you obtain the



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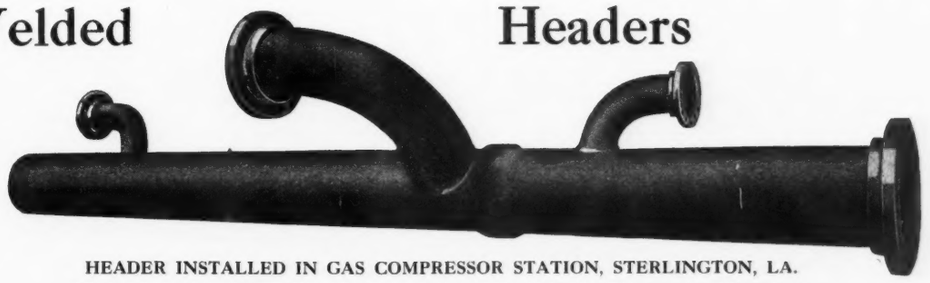

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In the Piping field, our experience is based on nearly three-quarters of a century's close contact with the problems of the Oil and Gas industry. As early as 1908, this company installed its first welded piping job. And ever since the ATWOOD Pipe Fabrication Department has been on the alert to meet more fully the fundamental requirements of Gas and Oil piping systems. These requirements are: reliability . . . accessibiilty . . . reduction of deterioration to a minimum . . . and incorporation of the most advanced engineering knowledge to maintain the highest operating efficiency for the system intended.

Also included in the ATWOOD Line of Gas service equipment are: swedged welding nipples . . . Van Stoned Tail Pieces . . . standard and specially-designed fittings . . . Check valves with outside dash pot *(photographic illustration upon request)*. Leading engineers from every oil and gas field specify and insist upon ATWOOD equipment. Why not capitalize on their knowledge?

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Darst Creek's Allowance Increased

Prolific Field in Guadalupe County, Texas, Looms Dangerously. Three New Wells in Pettus Field. New Wildcat Work

By B. D. Stevenson
Staff Correspondent, Southwest Texas Fields

SAN ANTONIO, Tex., May 5.—Doubling the allowable runs from the Darst Creek Field was announced last week and is one of the features of the oil news of Southwest Texas but it will not increase drilling activity in that area and the additional 12,000 bbls. daily will have its effect on the present overproduction situation but not in any other way. Total allowable runs as a result of the gauging of wells for the period May 1 to May 15 is 23,829 bbls. daily. This includes runs from the Magnolia wells which are produced on the same ratio as the rest of the field but not entering into the agreement. Allowable runs total from those participating in the agreement was 10,000 bbls. and was raised to 20,000 bbls. and Magnolia then doubled its runs.

Features of the Week

Features of the week in Southwest Texas, other than the increase in allowable runs from the Darst Creek Field, were the completion of three additional producers in the Pettus Field, preparations to pump the Sterling No. 1 Werner in Kendall County, interest in possible wildcat play northeast of the Bruner Field in Caldwell County and southwest of the Darst Creek Field in Guadalupe County, preparations for testing the Trinity and Pennsylvanian in Medina County and a sale of considerable magnitude in the Laredo district.

Pettus Field

Pettus Field is probably the most studied and discussed field in Southwest Texas at this time. Darst Creek is getting pretty well defined with some little room left for speculation. Pettus now has five oil wells at around 3,950 feet. The discovery well is about 6,500 feet east and slightly north of the railroad station at Pettus. It was drilled by the Houston Oil Co. which obtained the gas lease from the Humble. When the well came in oil it was turned over to the Humble which last week completed the No. 2 McKinney, 1,200 feet south of the No. 1 McKinney. Union Producing Co. completed its No. 5 Ray, 500 feet east and slightly north of the discovery well, some weeks ago. Last week it completed No. 7 Ray, located 1,000 feet west of the discovery well, and its No. 8 Ray, 600 feet west of the No. 2 McKinney.

The No. 2 McKinney of the Humble came in at 3,956 feet flowing at the rate of 550 bbls. through a five-sixteenths inch choke under 600 pounds pressure. The No. 7 Ray came in at 3,943 feet flowing 624 bbls. a day through three-sixteenths inch choke with 600 pounds pressure and the No. 8 Ray came in at 3,973 feet flowing 500 bbls. through choke.

Humble Oil & Refining Co. registered somewhat of a disappointment in its No. 1 Lackey & Wilson, 3 miles northeast of the Pettus oil field. It tested salt water at 3,960 feet. It is across the line in Goliad County. Last week it looked a little as though it was going to make a well. Fisher & Wiggins' No. 1 Kimball, 6 miles southwest of the field, tested salt water in sand at 3,102 feet.

Kendall County

Sterling's No. 1 Willie Werner is to be put on the pump. At 914 feet it was completed and the rig moved off. The well was closed in and it has built up pressure so that if the valve is cracked it will make some oil. This test is a pure wildcat on the upper side of the Balcones fault and is practically the first well ever drilled in that virgin territory. The owners have never claimed for it more than a small commercial well. It is due east of Sisterdale and is approximately in the center of the county. It is approximately 60 miles north and a little west of San Antonio.

The Pennsylvanian would be the most important formation in that part of the country, that formation being out of reach of the drill in much of the territory south of the Balcones fault. Five other tests that have started largely due to the discovery in the Sterling test are not at this time attracting particular interest.

Sterling is building storage for its No. 1 Werner and will put it on the pump and see what the well will do. The well is 10 or 12 miles from the Southern Pacific tracks and a pipe line and loading rack could be built at relatively small expense if a field develops.

Medina County

There is some renewed interest and activity relative to Medina County and especially as to deeper sands such as the Trinity. Sun Oil Co. is clearing titles on a block near Noon in the east central part of the county and it is understood the deeper sands are the object. National Oil Co. has spudded an Edwards lime test a little northwest of Devine in the southeast corner of the county, and Burgess, Jones & Miller have started a test 8 miles south of Hondo and have had a little oil showing at 1,050 feet, which is common at that depth in Medina.

Brooks County

Brooks County got a little setback when the Humble and Shell lost the hole in the No. 1 Singer, 6 miles southeast of the discovery well on the Lasater land. They have started rigging up No. 2 Singer. The Houston Oil Co. is down 6,003 feet in its No. 1 Wormser-Holbien, 660 feet from the discovery gas well. At 6,003 feet it tested dry gas with 800 pounds pressure. It will probably be mudded off and the hole deepened. It will be recalled the discovery well was at 4,110 feet and No. 1 Wormser-Holbien is experimenting with the lower formation. This and the Humble-Shell test to the south which is just now starting all over again are the only tests in that territory, hence unless No. 1 Wormser-Holbien suddenly goes into a new producing sand that territory in Brooks County will not have an opportunity to develop anything new.

Darst Creek and Bruner Areas

H. S. Morgan has a little more work to do on his No. 1 Perry, northeast of the Bruner Field in Caldwell County. Last reports placed it in the Georgetown at 2,714 feet, topped at 2,673 feet. It hasn't much farther to go to reach the Edwards lime and production if there is any. The test is about half a mile northeast from the Gulf's No. 1 Briscoe.

On the southwest of the Darst Creek Field where many operators have been looking for extensions to be brought in or else a new producing spot, T. C. Hadley is moving in to drill in the northwestern part of the R. Nixon Survey about 8 miles southwest of nearest production and south of the Guadalupe River.

Proration of Darst Creek for period May 1 to May 15, inclusive:

Company and lease—	Total No. wells	Total Potential	Daily allowance
Abercrombie and others:			
Dix T.	1	1,980	246
Empire G. & Fuel Co.:			
Dowdy	3	1,770	143
Dowdy	1	600	144
C. Knoblock	1	5,310	491
H. Willie	1	795	158
Empire total	6	8,475	936
Gulf Production Co.:			
C. Anderson	1	3,120	329
C. Anderson	1	1,560	315
A. Tadlock	2	1,860	168
T. Dix	1	1,740	228
T. Dix	1	7,560	656
Dix-McKean	1	1,770	350
Dix-McKean	2	2,910	207
Dix-McKean	2	2,880	206
Dix-McKean	3	2,670	165
Dix-McKean	1	10,584	878
C. Knoblock	1	9,000	762
C. Knoblock	1	3,900	387
D. C. Malaer	1	750	150
W. R. Posey	1	1,770	230
W. R. Posey	1	1,620	222
W. R. Posey	1	1,680	225
Gulf's total	21	55,374	5,258
Humble O. & R. Co.:			
D. D. Baker	1	1,110	182
D. D. Baker	3	2,715	167
L. G. Denman	1	1,500	216
L. G. Denman	1	1,515	211
L. G. Denman	1	2,100	254
L. G. Denman	1	2,040	236
L. G. Denman	1	1,230	196
L. G. Denman	1	1,140	184
L. G. Denman	3	3,810	192
L. G. Denman	1	1,080	179
L. G. Denman	1	1,200	188
L. G. Denman	1	800	159
L. G. Denman	1	690	151
A. E. Dowdy	1	960	171
S. E. Tadlock	2	163	106
S. Wilson	1	1,020	173
S. Wilson	1	384	128
S. Wilson	1	680	150
Y. Wilson	2	450	117
Humble's total	25	24,587	3,365
Kirby Petroleum Co.:			
R. Miller	1	549	140
Louisiana Oil Refining Co.:			
T. Dix	1	2,415	278
T. Dix	1	2,130	257
T. Dix	1	2,280	268
Dix-McKean	1	2,745	302
Dix-McKean	1	2,352	274
T. Dix	2	5,350	197
P. Roamel	1	1,152	164
Louisiana Oil's total	8	18,424	1,860
Penn Oil Co.:			
R. Miller	1	465	134
Stroube & Stroube:			
R. Miller	1	360	126
Sun Oil Co.:			
C. Knoblock	1	1,320	197
C. Knoblock	1	2,580	290
C. Knoblock	2	6,570	342
C. Knoblock	2	5,460	301
Sun's total	6	15,930	1,130
The Texas Company:			
L. Anderson	1	900	166
L. Anderson	1	1,140	184
L. Anderson	1	1,590	217
D. Wilson	2	2,580	195
D. Wilson	2	2,910	207
C. Knoblock	1	1,488	209
C. Knoblock	1	1,590	217
C. Knoblock	2	7,560	381
C. Knoblock	1	1,695	225
C. Knoblock	2	5,580	305
C. Knoblock	1	1,440	206
C. Knoblock	1	1,992	246
C. Knoblock	1	4,560	425
W. R. Posey	1	1,440	206
W. R. Posey	1	1,770	230
W. R. Posey	1	1,125	183
H. Willie	1	1,830	235
H. Willie	1	1,485	209
H. Willie	1	1,440	206
H. Willie	2	2,190	181
R. A. Parish	1	780	157
P. Roamel	2	315	112
P. Roamel	1	420	130
A. E. Dowdy	1	540	139
Y. Wilson	1	104	108
A. Schmidt	1	1,140	181
Texas' total	32	49,602	5,473
Trinity Drillers:			
R. Miller	2	622	126
R. Miller	1	951	170
R. Miller	1	750	155
Trinity's total	4	2,324	450
Magnolia Petroleum Co.:			
Klein	1	1,200	188
T. Dix	4	5,060	193
T. Dix	1	1,920	241
T. Dix	2	3,360	224
R. Miller	1	840	162
R. Miller	1	840	162
Richburg	2	1,015	137
A. Knodel	1	1,650	221
M. E. Roamel	1	41,928	3,183
Magnolia's total	14	57,813	4,711
Field total	120	235,883	23,829

WILDCAT OPERATIONS IN SOUTHWEST TEXAS

ATASCOSA COUNTY

Company, farm and location — Remarks:

Frontier Oil Co.'s No. 1 Gray, 425 ft. from S line, 2,586 ft. from W line of 902-ac. tract in the N. Flores Sur., 3 miles SW from Somerset Field ..... T. D. 1,850 ft.; drlg. in Taylor marl.

BASTROP COUNTY

Pacific Oil & Gas Co.'s No. 3 J. Spooner (450-ac.), 100 ft. E of No. 1 in the L. Leverance Sur. ..... Location.

Superior Oil Co.'s No. 1 J. M. Moore, 500 ft. from N line, 500 ft. from E line of 106-ac. tract in the G. T. Glasscock Sur. ..... T. D. 3,300 ft.; dry, abnd. (depth corrected).

B. L. Batts et al's No. 1 A. A. Alexander, W. M. Eastland Sur., 4,190 ft. to NW line, 1,320 ft. to SW line of Sur. ..... T. D. 1,360 ft.; drlg. in shale.

BEE COUNTY

Nichols Oil Corp.'s No. 3 Hicks, 500 ft. N-S line, 500 ft. E-W line of Blk. 19, just S of Normanna, 350 ft. SE of No. 2 Hicks discovery ..... T. D. 3,235 ft.; drlg. in sandy shale.

Cosden Oil Co.'s No. 1 R. A. McKinney, 150 ft. from S and E lines of McKinney 350-ac. in N part of S John Pace Sur., 1 mile W from Pettus ..... T. D. 1,010 ft.; drlg. in shale.

Rowan & Tong's No. 1 F. O. Massengale 350-ac., 150 ft. from S line, 3,184 ft. from W line of tract and survey, north John Pace Sur., 1½ miles W from Pettus Townsite ..... T. D. 3,580 ft.; drlg. in sandy shale.

Ed Price's No. 1 Mrs. Laura E. Weiss, 200 ft. out of NW cor. of B.&B. 640-ac. Sur., E of Normanna, 6 miles W of Blanco Creek, in the B.&B. Sur. ..... T. D. 1,015 ft.; just resumed drlg. after shut down.

Houston Oil Co.'s No. 1 J. F. Portis 288.3-ac., 1 mile SW of No. 1 McKinney, in the A. Smalley Sur. .... T. D. 4,975 ft.; coring sand and sandy shale.

Fisher & Wiggins' No. 1 A. J. Kimbell, C 189 acres in the Stephen Winship Sur. ..... T. D. 3,160 ft.; drlg. sandy gumbo.

BROOKS COUNTY

Houston Oil Co. of Texas No. 1 Wormser-Holbein, 1,550 ft. S. 2,650 ft. E of intersection of Lisandro Saenz & Manuel Saenz tracts, El Palo & Blanco de Magucllas Grant, SW of Lasater discovery gas..... Location.

Humble Oil & Rfg. Co.-Shell Pet. Co. No. 2 Wm. Singes, 1,320 ft. W. of E line, 1,800 ft. S. of N line of Sec. 312 Alta Verde area, 7 miles SE from Lasater gas field ..... Spudding in.

(Continued on Page 165)

Live Oak County

Operators are watching Live Oak County for any information. The Houston Oil Co. has been experimenting around its Lucas gas field where gas is had at about 2,250 feet. Its No. 1 Ross Booth is down 2,125 feet and on a line with it to the southwest about 7 miles and over the line into northern Jim Wells County some independents are rigging up to drill. Out of the 7,000-acre block some spreads have been sold as high

(Continued on Page 118)

Possible New Salt Dome at Danbury

Shell Oil Corp. Test Drilled to 5,255 Feet and to Be Plugged at 1,572 Feet as a Small Producer. New Tests at Refugio

By Neil Williams
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., May 5.—Another Gulf Coast geophysical prospect was definitely proved as a salt dome the past week when Shell Petroleum Corp.'s No. 1 Blakely-Winston at Danbury, Brazoria County, drilled into salt. Salt was topped at 5,228 feet and the hole drilled to 5,255 feet. The hole will be plugged to a shallow sand which was topped at 1,572 feet where an effort will be made to complete the test as a small producer.

If a well is made in this test it will open another dome for production as this is the first test drilled on this dome. The dome was discovered with the seismograph by the Shell Petroleum Corp. This shallow sand at 1,572-77 feet was tested last November when encountered. In the first test about 75 bbls. of net oil, 22.1 gravity, was swabbed. Tubing then was run and about 50 bbls. of fluid, 86 per cent of which was oil, was swabbed in 20 hours. At that time the well probably would have made a small pumper as the discovery well at Danbury but as the test had been rigged up for a deep hole the operators decided to drill deeper and possibly later come back to the sand.

The Danbury test has been one of the most interesting wildcats on the coast, especially with the interest which has been centered on prospects in Brazoria County. No. 1 Blakely-Winston is located in the H.T.&B. Survey No. 14 in the center of a large block controlled by the Shell Petroleum Corp. Several miles south of this dome, Ryeade Oil Corp. is drilling another wildcat, its No. 1 Rapid City, Henry Austin Survey, which Saturday was drilling pink gumbo at 4,112 feet. The latter area, known as the Austin Bayou district, also was checked with the seismograph and indications of a salt dome were given. If it proves to be a dome there will be two domes in this area within an unusually close distance.

Danbury and Austin Bayou are in the south central part of Brazoria County. In the northern part near Manvel and Pearland, The Texas Company has another newly checked prospect on which the first test, No. 1 O. F. Ewing, is drilling, being down 4,184 feet in sticky shale and lime. It is in the Harvey N. Little Survey. One other test is drilling in Brazoria County at this time, it being at Allen Dome in the extreme southern part of the county where Mills Bennett Production Co. is drilling in sandy shale and lime at 4,649 feet in No. 1 Random.

New Refugio Tests

In the Refugio area 12 new tests were started up or locations made the past week. Although Refugio was believed to have attained its peak production over a month ago and to have passed the heighth of its drilling development, these new tests indicate a renewal of effort to determine the extent of the producing sands, particularly the deep horizons on the east and the south of the original 3,700-foot field, which so far have not been proved.

Among the new tests starting are wildcats which push out the drilling play over a mile to the east as well as a similar distance to the south. On the far east side, Houston Oil Co. has made location for No. 1 O'Connor in the James Hewitson Survey. This is better than 5,000 feet to the southeast of Union Producing Co.'s No. 1 M. F. Lambert, a wildcat producer, which itself is 1½ miles to the northeast of any other production in the Refugio area.

However, 1,500 feet east of No. 1 M. F. Lambert is the same company's No. 2 M. F. Lambert, which is in the same sand at a total depth of 5,891 feet and which Saturday was drilling plug to test. The only other drilling between this and the new Houston Oil Co. wildcat is Independent Oil & Gas Co.'s No. 1 M. F. Lambert, an east offset to Union's No. 2.

Deep Production Test

The extent of deep production on the south side of the field will be given a good test in Independent Oil & Gas Co.'s No. 1 Clint Heard, location for which has been made on the company's tank farm tract on the extreme south end of the Refugio area. The latter test is over a mile to the south of any production or development in the original 3,700-foot field. It is between 5 and 6 miles southwest across the field from Houston Oil Co.'s new wildcat location for No. 1 O'Connor on the northeast.

Two other deep tests going in search of possible deep producing horizons on the south side of the field are Independent Oil & Gas Co.'s No. 2-C J. F. B. Heard, Edwin M. Jones' No. 2-A Mitchell and No. 2-A J. F. B. Heard, all of which lie between Independent's No. 1 Clint Heard on the tank farm tract and Union Producing Co.'s No. 2 Mitchell, at present the most southerly and westerly of the deep producers which fringe the 3,700-foot field on the east and south.

Independent failed to extend the deep production in its No. 1-C J. F. B. Heard, approximately 3,000 feet to the southwest of Union's No. 2 Mitchell. The Independent test was abandoned as dry after drilling to 5,720 feet. The location for No. 2-C Heard lies still farther westerly, although closer in to the original part of the 3,700-foot field.

Semiproven Territory

Most of the others of the 12 new tests starting are in semiproven territory. These include Morgan Oil Corp.'s Nos. 1, 2, 3 and 4 O'Connor on a 63-acre tract recently purchased by that company on the southeast side of the area. The locations are directly in the line of 5,500-foot sand production between Union Producing Co.'s No. 2 Mitchell on the south and the Ryals and Powers deep production immediately to the north. Pearson Properties are rigging up for No. 2 Ryals, and Moody-Seagraves Producing Co. is drilling in No. 2 O'Brien, both of which are location extensions to the east of the line of deep production. Other new tests are Houston Oil Co.'s No. 1 City, Block 5, and the same company's No. 1 West, Block 67; Mission Drilling Co.'s No. 1 Eliza Brown, Block 115, and Larco Co.'s No. 5 Strauch, on the northeast edge of the 3,700-foot field.

Three producers were completed at Refugio, all in the 3,700-foot field, during the week. These were Morgan Oil Corp.'s No. 7 City, Block 3, flowing 800 bbls. daily at 3,695 feet; Sun Oil Co.'s No. 2 Johnson, northeast edge, 350 bbls., 3,685 feet, and Saxet Oil Co.'s No. 2 Cable, 420 bbls., 3,687 feet.

West Side of Humble

Sun Oil Co. has abandoned as dry its No. 4 Bender on the west side of Humble. This test was drilled to 5,516 feet in shale. It is 400 feet north of the same company's No. 3 Bender, completed several months ago as the discovery well on the west side of the dome. The latter made a 2,000-bbl. well at approximately 3,940 feet and has proved a consistent producer.

So far Sun's No. 3 Bender is the only producer on the west side, all other tests so far having proved disappointing. During the previous week Lee & Wilson abandoned No. 1 Wise in heaving shale at 4,004 feet, and this week Continental Oil Co.'s No. 1 Kaltar looks like another failure, having tested salt water at 4,100 feet after having plugged back from 5,147 feet, where it was in heaving shale.

Rio Bravo Oil Co.'s No. 1 Fee, approximately 1,300 feet southeast of Sun's producer, however, is in an oil sand at a total depth of 4,212 feet and has cemented casing at 4,080 feet. This lies between the Sun well and the deep producing field on the south, although a considerable distance from the latter.

Production Declines

Gulf Coast production continued its steady decline the past week with the total daily average for the seven-day period only 198,336 bbls. Further substantial decreases were suffered in the major coastal fields of Barbers Hill, Refugio and Humble with all these field believed to have passed their peaks. Daily average production by fields for the week ending May 3 was:

SOUTHEAST TEXAS

Allen	44
Barbers Hill	18,456
Batson	1,256
Big Creek	4,428
Blue Ridge	2,075
Brenham	155
Boling	1,113
Clay Creek	1,740
Damon Mound	535
DeWalt	10,186
Fannett	1,121
Goose Creek	4,795
Hankamer	1,588
High Island	2,066
Hull	9,345
Humble	17,486
Jasper County	20
Lost Lake	620
Markham	317
Nash	308
North Dayton	580
Orange	2,374
Orchard	1,894
Pierce Junction	9,657
Port Neches	1,679
Raccoon Bend	10,135
Refugio	37,771
Esperson (Sheeks)	2,848
Saratoga	1,063
Sour Lake	1,874
South Liberty	4,687
Spindletop	17,601
West Columbia	5,935
Total Southeast Texas	175,752
Week ending April 26, 1930	179,743
Decrease	3,991

SOUTH LOUISIANA

Anse La Butte	37
Bayou Blue	130
Bayou Bouillon	511
Black Bayou	80
Edgerly	565
Jennings	1,055
Hackberry	3,902
Lake Barre	995
Lake Pelto	196
Lockport	3,984
New Iberia	7
Port Barre	1,760
Sorrento	206
Starks	452
Sulphur	5,200
Sweet Lake	117
Vinton	3,742
Welch	189
White Castle	376
Total South Louisiana	22,584
Week ending April 26	21,757
Increase	827
Total Gulf Coast	198,336
Week ending April 26	201,500
Decrease	3,164

Best Well of Week

The best well of the week was Vinton Petroleum Co.'s No. 6 Matilda Gray, Section 33-10s-1w, Vinton, Calcasieu

(Continued on Page 167)

GULF COAST FIELDS AND WILDCATS

Week Ended May 3

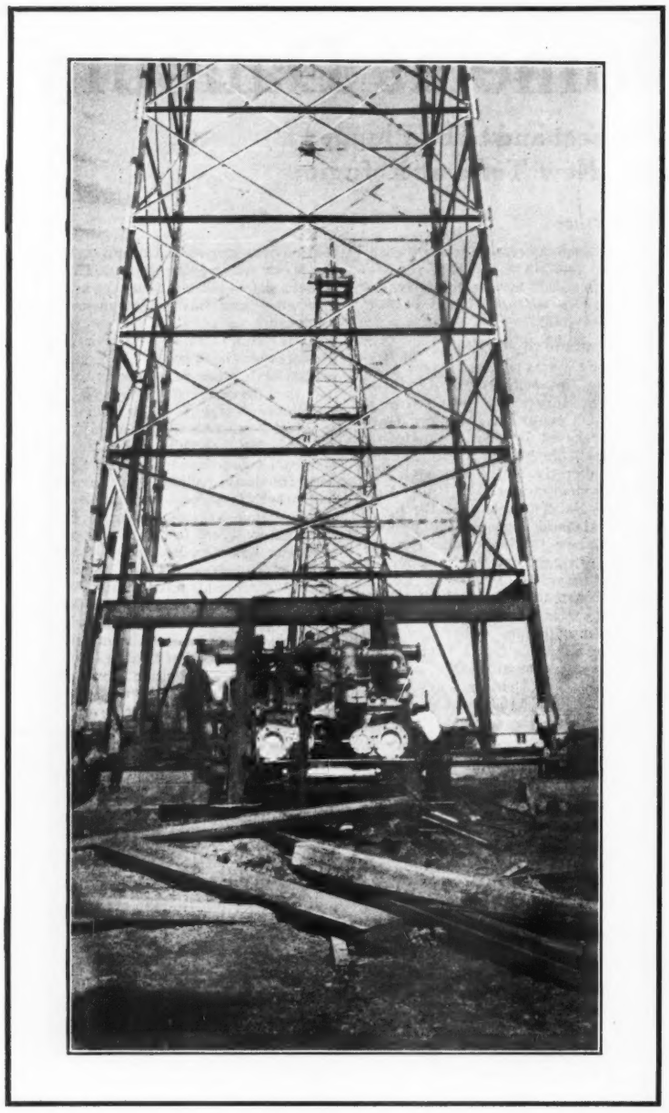
BARBERS HILL—CHAMBERS COUNTY

Mills Bennett Production Co.'s No. 2, Barber, north side.. Drill stem stuck 6,582 ft.; T. A.
Mills Bennett Production Co.'s No. 7 Barrow, southwest.. Milling 4,382 ft.; T. D. 5,642 ft.
Mills Bennett Production Co.'s No. 4 Wilburn, southeast.. Coring shale 5,183 ft.
Mills Bennett Production Co.'s No. 2 Gulf fee, southeast ..... Drlg. shale and lime 4,915 ft.
Mills Bennett Production Co.'s No. 1 Gulf-Fisher, south... Drlg. gumbo 1,048 ft.
Fell & Thornton's No. 1 McLain ..... Tested salt water 2,140 ft.; pulling screen.
Gulf Production Co.'s No. 3 Wilburn southeast ..... Drlg. shale 3,350 ft.
Gulf Production Co.'s No. 4 Wilburn, southeast ..... Drlg. sand and lime 3,978 ft.
Humhreys Corp.'s No. 1-F Barber, northwest ..... Dry shale 6,431 ft.
Humphrey's Corp.'s No. 2-C Kirby (workover) ..... Trying to straighten hole 3,100 ft.
Humphreys Corp.'s No. 1 Morgan ..... Drlg. shale 6,329 ft.; set 6¼-in. casing.
Humphreys Corp.'s No. 2 Scott ..... Drlg. hard sand and lime 4,941 ft.
Humphreys Corp.'s No. 1 C. Barber (workover) ..... Drlg. sand 5,235 ft.
Humphreys Corp.'s No. 2-H Kirby (workover) ..... Drlg. shale and lime 5,292 ft.
Humphreys Corp.'s No. 3-H Kirby (workover) ..... Drlg. sand 5,336 ft.
McAlbert Oil Co.'s No. 5 Woodward, southeast ..... Coring hard sand 5,228 ft.
Sinclair Oil & Gas Co.'s No. 3 McKinney fee ..... Drlg. sand and shale showing oil 5,290 ft.
Sinclair Oil & Gas Co.'s No. 4 McKinney Fee, southeast Derrick.
Sinclair Oil & Gas Co.'s No. 6 Wilburn, southeast ..... Oil sand 5,249 ft.
Sinclair Oil & Gas Co.'s No. 7 Wilburn, southeast ..... Drlg. shale 3,530 ft.
Sun Oil Co.'s No. 4, McKinney fee ..... Oil sand 5,304 ft.
Sun Oil Co.'s No. 5 Wilburn fee, southeast ..... Set screen 5,315 ft.; swabbing salt water 800 ft.
Sun Oil Co.'s No. 6 Wilburn fee, southeast ..... Drlg. lime 5,042 ft.
Sun Oil Co.'s No. 5 J. Wilburn, southeast ..... Drlg. shale and lime 3,858 ft.
Sun Oil Co.'s No. 6 J. Wilburn, southeast ..... Drlg. shale and lime 4,736 ft.
F. L. Thompson's No. 2 Wilburn, southeast ..... Drlg. lime 4,805 ft.
F. L. Thompson's No. 3 Wilburn, southeast ..... Cmtd. 6⅝-in. csg. 4,967 ft.
Unice Oil Co.'s No. 2 Feldman (workover) ..... To pump 5,156 ft.
Yount Lee Oil Co.'s No. 14 Chambers, south ..... Drlg. shale and lime 2,842 ft.
Yount Lee Oil Co.'s No. 3 Phillips, southeast ..... Drlg. shale and lime 4,657 ft.
Yount Lee Oil Co.'s No. 7 Woodward, southeast ..... Drlg. shale and lime 3,945 ft.
Yount Lee Oil Co.'s No. 1 Zadie Fisher, southeast ..... Drlg. hard sand showing oil 6,637 ft.

RACCOON BEND—AUSTIN COUNTY

Humble & Valley's No. 5 Bellville ..... Derrick.
Humble & Valley's No. 3 Buchanan ..... Derrick.
Humble & Valley's No. 2 Diener ..... Drlg. shale 3,134 ft.
Humble & Valley's No. 1-B Hardy (Waller County) ..... Drlg. shale 3,368 ft.
Humble & Valley's No. 5-B Grawunder ..... Drlg. shale 3,250 ft.
Humble & Valley's No. 1-C Mitchell ..... Derrick.
Humble & Valley's No. 7 Payne ..... Derrick.
Humble & Valley's No. 8 Payne ..... Derrick.
Humble & Valley's No. 9 Payne ..... Location.
Humble & Valley's No. 2 Sherrod ..... Location.
Humble & Valley's No. 4 Sherrill ..... To pump 3,538 ft.
Humble & Valley's No. 7 Thompson ..... Rig.
Humble & Valley's No. 7 Urban ..... Shut down 1,165 ft.
Humble & Valley's No. 8 Thompson ..... Comp. flowing 650 bbls. oil 3,283 ft.
Humble & Valley's No. 8-A Walton ..... Rig.

(Continued on Page 165)



IDEAL -AJAX

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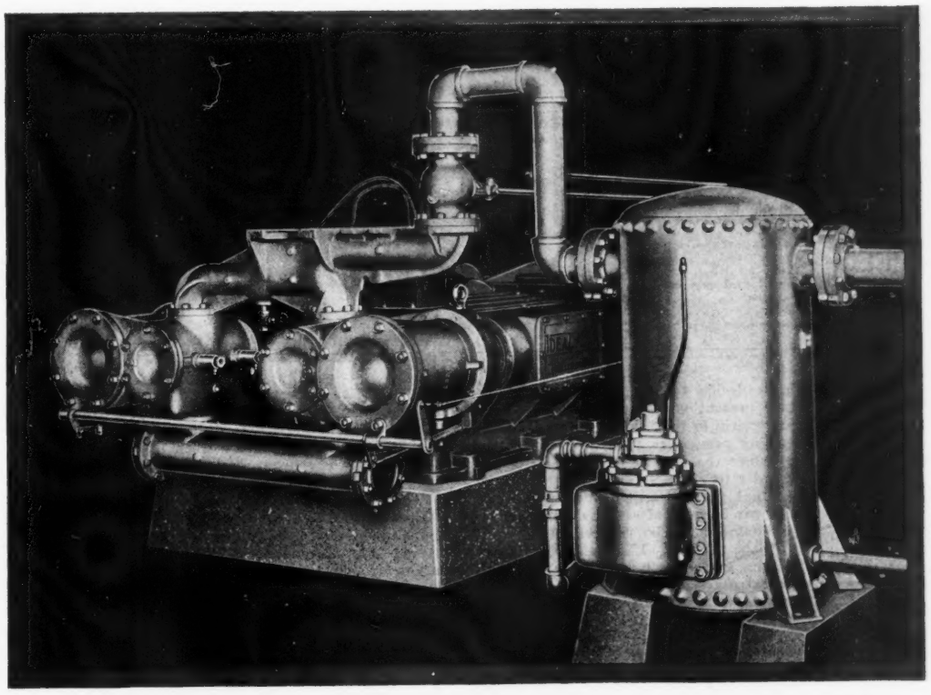
THE IDEAL-AJAX 12x12 Twin Roller Bearing Engine is here being rigged up to drill a test well to a depth of about 8,500 ft. for the Texon Oil Co. of Big Lake.

The drillers selected IDEAL-AJAX, knowing that they can count on its performance.

All AJAX and IDEAL-AJAX users should investigate the possible value of hooking up a new Ajax extra-heavy Separator. It is essential with all piston valve engines and will increase the efficiency of all slide valve engines. It means much in lubrication . . . in time to get up drilling speed . . . and in steady performance.



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IDEAL-AJAX

ROLLER BEARING

STEAM DRILLING ENGINES

Ask the National Supply Man for Details

California Situation Still Complicated

Contradictory Factors in Producing and Refining Divisions. Liquidation of Stocks Needed for Stabilization

L. P. Stockman
Staff Correspondent, California Fields

LOS ANGELES, Calif., May 3.—The production situation in California presents a very interesting picture at the present time although the perspective is somewhat distorted if viewed from a prejudiced standpoint. In other words, conditions are both favorable and unfavorable, if such a diametrically opposed situation is possible. To the producer of crude oil whose operations are limited strictly to flush areas, things are not so very serious as the substantial production secured and the increase in crude oil prices posted March 11, 1930, has compensated to some extent for the amount of production pinched back in conformity with the crude oil curtailment plan. In the settled fields where pumping wells are the rule rather than the exception, however, profits are necessarily limited because of small production and the fact that the price adjustment mentioned above was not sufficient to offset the stipulated curtailment. In other words, an increase in the posted price for crude oil of say 20 per cent hardly compensates for a 30 per cent curtailment in crude oil production of settled pumping fields especially where the disparity between profit and loss is necessarily small because of heavy lifting costs.

TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Commodity—	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Crude oil	.....	.....	.....	.....	77,405	328,410
Fuel oil	.....	.....	.....	.....	71,950	49,950
Diesel and gas oil	94,546	13,507	143,916	20,559	1,471,644	860,124
Gasoline	302,573	43,225	382,687	54,700	5,458,823	6,348,757
Naphtha distillate	.....	.....	.....	.....	.....	81,750
Coastwise—						
Crude oil	188,102	26,872	511,811	73,116	5,038,034	8,280,319
Fuel oil	380,082	54,297	189,772	27,110	5,783,111	7,138,226
Diesel and gas oil	8,484	1,212	48,376	6,911	637,190	475,662
Gasoline	255,219	36,460	63,806	9,115	3,579,727	3,510,838
Kerosene	19,281	[illegible]	...	...	...	...
Exports—						
Crude oil	84,021	12,003	140,560	20,080	2,172,554	1,685,553
Fuel oil	497,955	71,136	338,992	48,427	5,865,595	6,031,671
Diesel and gas oil	79,072	11,296	127,196	18,171	1,730,998	757,937
Gasoline	249,124	35,589	324,903	46,415	5,226,368	3,084,001
Kerosene	95,379	13,626	254,697	36,385	1,401,344	885,534
Lubricants	.....	.....	5,025	717	10,082	.....

TANKER SHIPMENTS FROM SAN FRANCISCO TO ATLANTIC AND GULF COAST PORTS

Diesel and gas oil	.....	.....	.....	.....	88,280	.....
Gasoline	.....	.....	.....	.....	440,188	935,547
Lubricants	.....	.....	.....	.....	2,946	.....
[illegible]						
Fuel oil	.....	.....	95,521	13,646	1,198,260	848,534
Diesel and gas oil	.....	.....	4,454	636	104,327	234,220
Gasoline	32,461	4,637	71,957	10,280	1,306,307	1,189,673
Kerosene	.....	.....	3,752	536	106,349	39,647
Exports—						
Crude oil	.....	.....	.....	.....	3,075	121,603
Fuel oil	.....	.....	.....	.....	347,444	241,671
Diesel and gas oil	.....	.....	.....	.....	124,540	124,838
Gasoline	87,640	12,520	105,606	15,087	1,288,492	1,933,578
Kerosene	.....	.....	.....	.....	162,499	199,428
Lubricants	.....	.....	.....	.....	.....	17,688

Refiners' Viewpoint

The viewpoint of the refiner is equally as distorted as the outlook of the producer. It is quite obvious that a refining company which purchases more crude oil than it produces is in a disadvantageous position every time that crude oil prices are raised. On the other hand, a company which produces more crude oil than it purchases is in a much more favorable position to absorb any increase in the cost of crude purchased and is likewise in a better position from a marketing standpoint, as its cost per gallon of gasoline based on the average cost of raw material is naturally smaller. Inefficient operation, however, often times offsets this apparent advantage with the result that the added production cost of gasoline, because of this overhead, offsets any advantage accruing from a lower average cost of raw material.

Because of the varying and diversified interests of these producers and refiners, curtailment work has not been as effective as might be desired. Production figures indicate that the State's output of crude oil has only been within striking distance on two occasions of the maximum allowable established by the Operators General Committee on Curtailment. This situation is naturally discouraging to many especially to those companies which are still holding the sack while others are producing above their prescribed allowable. This unsatisfactory condition has also prevented a general acquiescence in the movement to reduce present stocks of crude and refined oils, the result of which, it is thought, would tend to stabilize conditions by removing distress gasoline and eliminate the threat of gasoline wars from time to time when refiners decide to liquidate their surplus stocks.

Liquidation of Stocks

This brings up a very vital subject and one of paramount importance from the standpoint of stabilization because California operators are in a quandary as to just what constitutes stabilization from a production standpoint. In other words, just how much can the State produce with equanimity. This figure of course is dependent primarily upon whether refiners decide to liquidate a portion of their present surplus stocks or whether they wish to just break even. If the refining companies find it advantageous to reduce the present storage of gasoline in order to effect stabilization by removing that ever present threat of a gasoline war because of surplus stocks, State production must be reduced below 600,000 bbls. per day. If, on the other hand, refiners are content to carry along their present excessive storage of gasoline and break even, the State can produce a little better than 600,000 bbls. per day without disturbing the present equilibrium. It is quite obvious that the situation is a rather complex one presenting a number of various diversified interests. The refiner who is incapable of producing sufficient crude to meet current requirements is naturally adverse to liquidating his present storage of gasoline as it would obviously be more advantageous to feed this out over a longer period of time at a higher price.

The policy of California refiners in accumulating stocks of gasoline in the past is predicated on the theory that stabilization is just around the corner and that subsequent liquidation at a favorable price should prove highly remunerative. This policy, however, while it may eventually be justified, is not warranted at the present time as each succeeding year since 1923 has seen a substantial increase in production, or at least the maintenance of an output too high to permit liquidation at high prices. This is of particular importance at the present time as indications point to a continued high rate of production for several years to come. In the face of this deduction it is logical to expect refiners to begin liquidating present stocks of gasoline in order to be in a position to take advantage of any forthcoming period of excess production. Liquidation of surplus stocks at the present time would provide refiners with additional funds for expansion and leave a sufficient number of empty tanks to take care of any future accumulation.

Reduction in Stocks Needed

The Kettleman Hills Field of Kings County is due to become an important factor in field production late next year unless the output is regulated by some form of unit development. Even with this field entirely out of the picture there is sufficient crude oil in sight to justify the immediate reduction of all surplus stocks of crude and refined oils as the recent discovery of a new deep zone in the North Belridge Field of Kern County apparently opens up another group of fields for deep zone exploitation. The existence of similar Vaqueros production at Lost Hills, South Belridge, McKittrick and Midway-Sunset is conjectural at the present time although conditions are favorable from a geological and structural standpoint. This factor, together with present crude oil curtailment approximating 260,000 bbls. per day, appears ample justification for refiners to begin liquidating excess stocks.

To reduce stocks of crude and refined oils to the point that they will not continue to be a disturbing factor, it will be necessary to reduce State production well below 600,000 bbls. per day. The question naturally arises as to where this projected reduction might be effected. This appears to be the fly in the ointment as many are of the opinion it is practically impossible to effect any further substantial reduction in current production. It is probable State production, approximately 625,000 bbls. per day at present, could be brought down to at least 600,000 bbls. if the present curtailment plan could be made more effective, but it is doubtful whether poduction could be cut very much further without inflicting too much of a burden on small producers. The curtailment in present flush fields, such as Santa Fe Springs, Elwood, Long Beach, Ventura Avenue and Seal Beach, approximates 43 per cent and would require a further subtantial curtailment to cut another 50,000 bbls. per day from State production as many of the older settled fields would be unable to make much of a reduction without shutting down entirely or operating at a heavy loss. Long Beach appears to be out of the question as it is very doubtful any additional curtailment could be effected. This places the brunt of the burden on Elwood, Santa Fe Springs, Ventura Avenue and one or two other semiflush fields which could hardly be expected to reduce production anywhere near 50,000 bbs. per day.

General Operating Committee

The final outcome of the survey being made by E. W. Wagy, R. E. Haylet, W. E. Dunlap and Ralph Lloyd, under the supervision of the General Operating Committee, will probably result in a recommendation that production in California be reduced to 575,000 bbls. per day and maintained at that figure for several months. This will permit a fairly substantial reduction to be made in gasoline stocks during the summer so that refiners can view the outlook with equanimity. To achieve this objective operators will be obliged to curtail an additional 35,000 bbls. per day from their present allowable maximum production, which the Operators General Committee on Curtailment set at 610,000 bbls. three months ago. This reduction could probably be effected in the flush fields listed by the Fact Finding Committee in production Group A, consisting of Santa Fe Springs, Long Beach, Ventura Avenue, Elwood, Seal Beach, Kern Front, Mount Poso, Round Mountain and Maricopa Flats. Just how this will be prorated remains to be seen as some of these fields are not susceptible of any further substantial curtailment.

Operators in the Maricopa Flats area of the Midway-Sunset Field have gone on record as being heartily in favor of reducing State production to 550,000 bbls. per day and expressed themselves as willing to have this section bear its share. This is the first field group to endorse the proposal to bring State production down below 600,000 bbls. daily to permit refiners to reduce current stocks. It is likely operators in a number of other fields will also endorse this proposal but there are some also who will probably rigorously object to any further reduction. While operators are making every effort to reduce production in existing fields new areas are being opened up from time to time by wildcatters. The discovery of oil at Playa Del Rey in Los Angeles Basin several months ago has stimulated interest in the possibilities of acreage for many miles around. The Santa Monica Planning Commission, after a stormy session, voted to permit wildcatters to drill several holes around the edge of the city. The new area thrown open for exploration starts at a point 150 feet west of Third Street and Ocean Park thence north to Pico Boulevard, thence along Pico to Clover Field Boulevard, thence north to Colorado Avenue and along Colorado Avenue to the city limits.

Potrero

The attention of operators was focused on the Potrero Field of Los Angeles Basin again this week when two more good wells were finished in the town lot area. The latest completions were Hugh Grant's No. 1 Potrero, which came in flowing 806 bbls. of clean 49.1 gravity oil daily from 5,250 feet and No. 2 Inglewood Community of the Sunset Pacific Oil Co., which registered an initial of 875 bbls. per day from 5,499 feet. Output of the latter well is cutting approximately 30 per cent, indicating bottom water has probably been encountered, although it is not at all improbable the water string was set too high. The theory of bottom water is confirmed by the fact that No. 3 Inglewood Community, a recent completion, is producing 1,350 bbls. of clean pipe line oil per day. If the Sunset Pacific's last well has actually drilled into bottom water this new zone will probably be similar to the first two which failed to yield sufficient oil to pay for drilling.

Officials of the company are so optimistic over the outlook they completed preparations for the Sunset Pacific to take over Max Pray's No. 1 Gasho and the Globe Lease & Royalty's No. 6 Potrero. Both wells were originally finished in the upper zone but have been idle for some time because of the inabil-

ity to secure commercial production. The Sunset will redrill and deepen Max Pray's former hole from 3,841 feet to the new zone and will start deepening operations on No. 6 Potrero at 4,190 feet. This new development has revived interest in the Potrero Field after a dormant period of almost a year. George Getty has started preparations to redrill and deepen his No. 1 Potrero from 3,846 feet to the new Sunset Pacific zone. York & Lockhart, Associated Oil Co. and several others are also rushing plans to participate in any flush production available before the gas head is exhausted.

Elwood Field

The Elwood Exploration Co., a subsidiary of the Honolulu Consolidated Oil Co., finished another good well in the prolific Elwood Field of Santa Barbara County, boosting the field's potential to approximately 90,000 bbls. per day. Elwood's latest producer was No. 2 on tideland Permit No. 90, which came in flowing 4,530 bbls. of clean 37.1 gravity oil and 4,900,000 feet of natural gas daily from 3,495 feet, the hole having been finished with a 6⅝-inch liner carrying 311 feet of 120 mesh screen. Several other potential producers are nearing completion at Elwood, one, No. 6 Doty of the Barnsdall and Rio Grande, is scheduled to be finished within 24 hours. Although this field is relatively free of intensive competitive drilling, several new wells are getting under way on both tideland acreage and leaseholds on the mainland.

The Associated finished another big well in the Ventura Avenue Field when No. 11 Ventura Land & Water blew in flowing 4,755 bbls. of 26.5 gravity oil and 2,800,000 feet of gas from 7,371 feet, the 8¼-inch water string having been landed at 7,336 feet. This is the second large well to be finished by the Associated at Ventura Avenue, No. 97 Lloyd having been completed about ten days ago flowing 5,180 bbls. from 7,193 feet. The Shell also chalked up a new well in this field but it was not of any consequence due to water trouble. This was No. 39 Taylor, which made 278 bbls. daily from 7,055 feet with an 8⅝-inch water string landed and cemented at 4,901 feet. The output is cutting 50 per cent, indicating a defective water shut off. The General Petroleum has re-entered No. 2 Ferguson, a tideland project which recently came in flowing 1,100 bbls. from 3,455 feet, and found the hole bridged to 3,240 feet. It is the present intention to carry this project on down but if it shows a tendency to register substantial production when the hole is cleaned out to bottom it will be permitted to flow and deepening operations temporarily suspended.

The Union Oil Co. headed the completion list at Santa Fe Springs when No. 24 Alexander, a new well, was brought in flowing 2,289 bbls. of clean 32.1 gravity oil from the Nordstrum zone at 5,125 feet. The substantial production shown by this well in contrast with the output of other recent completions is not surprising to those familiar with existing conditions as it is somewhat removed from the intensively drilled town lot section in an area which has not been subjected to extreme drainage. The Associated also finished a satisfactory completion at Santa Fe Springs when No. 3 Jordan was redrilled and deepened to the Clarke zone at 7,900 feet, from which depth it registered an initial of 764 bbls. per day, the oil being clean and testing 33.8 degrees. The Associated's No. 7 Dallugge, on the other hand, was good for only 80 bbls. daily upon recompletion in the Nordstrum zone at 5,278 feet. The General Petroleum Corp., a subsidiary of the Standard Oil Co. of New York, listed two new wells for completion and increased its daily production 801 bbls. These were No. 230 Santa Fe, which came in flowing 679 bbls. daily from 7,144 feet, and No. 105 Hill Midway, which made 122 bbls. initially from 7,950 feet.

George F. Getty failed to secure a natural flow in No. 48 Mitchell and was forced to put it on a compressor. Even with this artificial stimulation it was good for only 72 bbls. daily from the Clarke zone at 7,900 feet. The Wilshire Oil Co.'s No. 2 Eagle was another small well finished this week as it made only 25 bbls. per day from 6,875 feet, the hole having been plugged back from 6,889 feet upon recompletion. No. 4 Koontz of the Wilshire was a little better as it showed an initial of 130 bbls. upon recompletion in the Buckbee zone at 5,710 feet, the hole having been plugged back from the O'Connell horizon at 6,800 feet. The Standard's contribution to the field's producers was No. 13 Santa Gertrudes, finished doing 198 bbls. of clean 34.3 gravity pipe line oil from the Clarke zone at 7,900 feet. The Texas Company did not have much luck with No. 4 Foix by plugging it back from 8,100 feet to 7,323 feet as it only made 53 bbls. per day. H. A. Bardeen recompleted his No. 1 Springs doing 135 bbls. per day from 7,160 feet.

Long Beach

Completions at Long Beach were a little more numerous and a check indicates several more potential producers will be finished during the next 15 days. The Commercial Monarch Oil Co. started off by finishing No. 1 Fee, a new well good for 550 bbls. of 29.6 gravity oil daily.

(Continued on Page 171)

MICHIGAN PRODUCTION IN MARCH AVERAGED 11,000 BARRELS PER DAY

By Special Correspondent

MUSKEGON, Mich., May 5.—Michigan produced 365,362 bbls. of oil during March, according to a report received at the Muskegon Field office of the conservation department from Floyd R. Frye, state supervisor of oil and gas conservation. Of the total production the Mount Pleasant Field, of central Michigan, led with 202,463 bbls., or an average of 6,351 bbls. a day. Muskegon was a comparatively close second with a total of 155,286 bbls., or a daily average of 5,009 bbls. The old Saginaw Field on the east side of the State made 7,613 bbls., or 245.5 bbls. a day, from the Berea formation.

A similar report from the United States Bureau of Mines indicates a total production of 359,000 bbls. for March, or an average of 11,000 bbls. a day, compared with 351,000 bbls. in February, a daily average of 13,000 bbls.

Although production for the first quarter of 1930 was 1,107,000 bbls. for the State compared with 434,000 bbls. during the first quarter of 1929, indications are that unless some new pool or new pay sands is discovered Michigan this year will fall below its record production of about 5,500,000 bbls. set in 1929. Both the Muskegon and Mount Pleasant Fields are on the decline for lack of new production.

The Blue Arrow Petroleum Co.'s No. 2 A. Workman well, NW SE, Section 8-10-16, Muskegon Township, on the river flats, is to be deepened a little below its present depth of 2,012 feet before it is completed in the Dundee formation. It was first drilled into the lower pay sands several weeks ago.

Fred Estes and others shot their No. 1 Page well, NE SE, Section 6-10-16, Muskegon Township, this week in an effort to increase its production in the Dundee formation. The well is 2,049

(Continued on Page 122)

IMPORTANT SOUTHERN CALIFORNIA WILDCATS

Company, well and location—	S.T.R.	Depth	Status
Simmel, L. G., No. 1 Inglewood, Los Angeles Co.	21- 2-14	5,380	suspended
Raleigh Oil Co., No. 1 Malibu, Los Angeles Co.	1- 2-19	3,880	suspended
Clearwater Oil Co., No. 1 Bellflower, Los Angeles Co.	21- 3-12	5,150	suspended
Burlingham Pet., No. 1 Compton, Los Angeles Co.	17- 3-13	2,858	sd. sh. drilling
Diller, W., No. 1 Watts, Los Angeles Co.	8- 3-17	5,800	cleaning out
Crimson Pet., No. 1 Compton, Los Angeles Co.	22- 3-13	75	sd. drilling
Ohio, No. 1 Moneta, Los Angeles Co.	35- 3-14	4,130	sd. sh. drilling
Cal. Ventura Oil Co., No. 1 Manhattan, Los Angeles Co.	30- 3-14	6,525	suspended
Cal. Ventura Oil Co., No. 1 Hermosa, Los Angeles Co.	31- 3-14	rig	suspended
Archer Oil Co., No. 1 Watson, Los Angeles Co.	17- 4-13	5,557	suspended
Shell, No. 1 Van Nuys, Los Angeles Co.	19- 2-15	2,145	sd. sh. drilling
Anchor Oil Co., No. 1 Puente, Los Angeles Co.	19- 2-10	4,820	suspended
Rucker, R. C., No. 1 Puente, Los Angeles Co.	27- 2-10	3,660	suspended
Sherman, J. W., No. 1 Puente, Los Angeles Co.	33- 2- 8	850	suspended
Keck & Hall, No. 1 Puente, Los Angeles Co.	32- 2- 8	1,120	gas well
Marcel Pet. Co., No. 1 Puente, Los Angeles Co.	31- 2- 8	1,735	gr. sd. drilling
Los Gatos Oil Co., No. 1 El Monte, Los Angeles Co.	16- 1-11	1,950	suspended
Olympic Corp., No. 1 Calabasas, Los Angeles Co.	18- 1-17	3,690	hd. sd. drilling
Martin, J. W., No. 1 Newhall, Los Angeles Co.	22- 1-17	1,290	suspended
Consolidated Oil Co., No. 1 Newhall, Los Angeles Co.	8- 3-16	1,555	cleaning out
National Sec., No. 1 Newhall, Los Angeles Co.	1- 3-16	874	suspended
Anderson, P. B., No. 1 Hasley Canyon, Los Angeles Co.	1- 3-16	900	cleaning out
Pioneer Pet., No. 1 Newhall, Los Angeles Co.	14- 3-16	2,838	suspended
Union, No. 1 Coyote, Sansinena, Los Angeles Co.	30- 2-10	3,076	to deepen
Tuxeco Oil Co., No. 1 Whittier, Los Angeles Co.	29- 2-11	rig	rigging up
Beard, G. F., No. 1 Brea Canyon, Los Angeles Co.	30- 2- 9	1,099	suspended
Western Gulf, No. 1 Brea Canyon, Los Angeles Co.	28- 2- 9	4,009	hr. sh. drilling
Standard, No. 1 Bastanchury, Coyote, Orange Co.	21- 3-10	5,385	sd. sh. drilling
Graham & Loftus, No. 1 Coyote, Orange Co.	18- 3- 9	3,174	sd. sh. drilling
Union Oil Co., No. 1 Richfield, Orange Co.	13- 3- 9	4,350	hd. sd. drilling
Simmel, L. G., No. 1 Yorba Linda, Orange Co.	21- 3- 9	rig	rigging up
Mesa Pet., No. 1 Newport, Orange Co.	21- 6-10	4,910	suspended
Hall, H. L., No. 1 Newport, Orange Co.	20- 6-10	692	hd. sd. drilling
Standard, No. 1 Newport, Orange Co.	26- 6-10	...	location
Fidelity Pet. Co., No. 1-A Murrietta, Riverside Co.	23- 7- 3	701	cleaning out
Hemet Pet. Co., No. 1 Ward, Riverside Co.	9- 5- 1	3,560	suspended
Imperial Valley Oil Co., well No. 1, Imperial Co.	32-11-10	2,980	suspended
San Marcos Oil Co., well No. 1, San Diego Co.	9-12- 3	rig	suspended
Turner, S. S., No. 1 Escondido, San Diego Co.	25-12- 2	2,170	suspended
McGregor Synd., No. 1 Del Mar, San Diego Co.	17-14- 3	1,260	sd. sh. drilling
Borderland Oil Co., No. 1 Encinitas, San Diego Co.	12-13- 4	2,410	sd. sh. drilling
Borderland Oil Co., No. 1 Point Loma, San Diego Co.	30-16- 3	2,396	gr. sd. drilling
Grey, H. H., No. 1 Redlands, San Bernardino Co.	25- 1- 2	2,525	fishing
Duncan, N. I., No. 1 Mohave, San Bernardino Co.	8- 4- 6	rig	suspended
Girard & Grimes, No. 1 Corona, San Bernardino Co.	8- 2- 8	1,468	fishing

IMPORTANT NORTHERN CALIFORNIA WILDCATS

Company, well and location—	S.T.R.	Depth	Status
Union, No. 1 Buel Canyon, Santa Barbara Co.	X- 7-31	4,585	to abandon
Standard, No. 1 Point Conception, Santa Barbara Co.	X- 5-34	4,380	cleaning out
Universal, Consd., No. 1 Pt. Conception, Santa Barbara	30- 5-34	1,860	sd. sh. drilling
Ohio Oil Co., No. 1 Lompoc, Santa Barbara Co.	2- 6-34	4,477	sd. sh. drilling
Prairie Oil Co., No. 1 Lompoc, Santa Barbara Co.	15- 7-35	2,412	hd. sd. drilling
Aqueros Oil Co. No. 1 Purisima, Santa Barbara Co.	5- 7-33	mtl.	building rig
Fields Gasoline Co., No. 1 Santa Maria, Santa Barbara Co.	8- 9-33	2,440	bl. sh. drilling
Barnsdall Co. No. 1 Gato Ridge, Santa Barbara Co.	9- 8-32	200	sd. drilling
Duell Pet. Co., No. 1 Santa Ynez, Santa Barbara Co.	9- 7-30	rig	rigging up
Carey, A., No. 1 Goleta, Santa Barbara Co.	1- 4-28	2,880	suspended
General Pet., No. 1 Goleta, Santa Barbara Co.	21- 4-28	4,533	shut in
General Pet., No. 2 Goleta, Santa Barbara Co.	21- 4-28	4,350	cleaning out
General Pet., No. 136 Goleta, Santa Barbara Co.	21- 4-28	1,016	suspended
General Pet., No. 137 Goleta, Santa Barbara Co.			[illegible]
General Pet., No. 138 Goleta, Santa Barbara Co.	21- 4-28	3,592	sd. sh. drilling
General Pet., No. 139 Goleta, Santa Barbara Co.	21- 4-28	1,035	suspended
General Pet., No. 143 Goleta, Santa Barbara Co.	21- 4-28	1,040	suspended
Boles Oil Co., No. 140 Goleta, Santa Barbara Co.	22- 4-28	50	suspended
U. S. Pet., No. 141 Goleta, Santa Barbara Co.	20- 4-28	1,035	suspended
U. S. Pet., No. 142 Goleta, Santa Barbara Co.	20- 4-28	1,032	suspended
U. S. Pet., No. 143 Goleta, Santa Barbara Co.	20- 4-28	1,019	suspended
Macmillan Pet. No 134 Goleta, Santa Barbara Co.	21- 4-28	175	suspended
Bolsa Chica, No. 191 Goleta, Santa Barbara Co.	24- 4-29	mtl.	building rig
Caldwell Brown, No. 159 Goleta, Santa Barbara Co.	24- 4-29	25	suspended
El Camino Oil, No. 149 Goleta Tideland, Santa Barbara	22- 4-28	40	suspended
Frazer & Oliver, No. 173 Capitan, Santa Barbara Co.	4- 4-30	101	suspended
Indian Pet., No. 174 Capitan, Santa Barbara Co.	4- 4-30	230	suspended
McLaine, W. L., No. 175 Capitan, Santa Barbara Co.	4- 4-30	30	suspended
Durkee, R. S., No. 176 Capitan, Santa Barbara Co.	4- 4-30	30	suspended
Cunningham, W., No. 177 Capitan, Santa Barbara Co.	4- 4-30	30	suspended
Oakburn Oil Co., No. 168 Capitan, Santa Barbara Co.	4- 4-30	370	suspended
Oakburn Oil Co., No. 169 Capitan, Santa Barbara Co.	4- 4-30	200	suspended
Oakburn Oil Co., No. 170 Capitan, Santa Barbara Co.	4- 4-30	1,302	shut in
Oakburn Oil Co., No. 171 Capitan, Santa Barbara Co.	4- 4-30	300	suspended
Oakburn Oil Co., No. 172 Capitan, Santa Barbara Co.	4- 4-30	325	suspended
Wildcat Oil Co., No. 1 Santa Maria, Santa Barbara Co.	20-10-35	4,500	sd. sh. drilling
Pacific Western, No. 1 Gilbraltar, Santa Barbara Co.	14- 5-27	2,345	suspended
Shell, No. 1 Summerland, Santa Barbara Co.	18- 4-25	2,900	hr. sh. drilling
Standard, No. 1 Casitas, Santa Barbara Co.	26- 4-25	2,250	hd. sd. drilling
Continental, Tideland permit No. 121, Santa Barbara Co.	33- 4-25	55	suspended
Continental, Tideland permit No. 122, Santa Barbara Co.	33- 4-25	410	sd. sh. drilling
Continental, Tideland permit No. 123, Santa Barbara Co.	33- 4-25	125	suspended
Continental, Tideland permit No. 124, Santa Barbara Co.	33- 4-25	3,560	sd. sh. drilling
Continental, Tideland permit No. 124-A, Santa Barbara Co.	33- 4-25	418	suspended
Continental, Tideland permit No. 125, Santa Barbara Co.	33- 4-25	120	suspended
Continental, Tideland permit No. 126, Santa Barbara Co.	33- 4-25	200	suspended
Continental, Tideland permit No. 127, Santa Barbara Co.	33- 4-25	145	suspended
Continental, Tideland permit No. 128, Santa Barbara Co.	33- 4-25	98	suspended
Continental, Tideland permit No. 129, Santa Barbara Co.	33- 4-25	97	suspended
Exeter Oil Co., Tideland permit No. 163, Santa Barbara Co.	32- 4-25	76	suspended
Getty, George F., No. 120 Carpinteria, Santa Barbara Co.	32- 4-25	862	sd. sh. drilling
Getty, George F., No. 130 Carpinteria, Santa Barbara Co.	32- 4-25	55	cemented
Shell, No. 5 Oxnard, Ventura Co.	14- 2-20	rig	rigging up
Standard, No. 5-9 Saticoy, Ventura Co.	10- 2-22	8,529	redrilling
Prairie Oil & Gas, No. 1 Ventura, Ventura Co.	30- 3-22	4,457	redrilling
Bolsa Chica, No. 1-A Temescal, Ventura Co.	4- 4-18	2,191	hr. sh. drilling
Fennell, E. A., No. 1 Lansdershim, Ventura Co.	13- 4-19	1,600	hd. sd. drilling
General Pet., No. 1 Fillmore, Ventura Co.	6- 3-19	1,112	sd. sh. drilling
Associated, No. 1 Rincon Creek, Ventura Co.	19- 4-24	1,760	hd. sd. drilling
Calleguas Synd., No. 1 Camarillo, Ventura Co.	6- 1-20	870	hd. sd. drilling
Camarillo Synd., No. 1 Camarillo, Ventura Co.	33- 2-20	225	sd. sh. drilling
Milham Explt'n., No. 9 Buttonwillow, Kern Co.	8-28-23	4,990	fishing
General Pet., No. 1 Buttonwillow, Kern Co.	6-28-23	2,706	will deepen
Shell, No. 1 Lerdo, Kern Co.	23-28-26	rig	rigging up
Nordon Exp. Co., No. 1 Buttonwillow, Kern Co.	[illegible]-24	135	suspended
Shell, No. 1 Weed Patch, Kern Co.	29-30-29	3,520	gr. sd. drilling
Shell, No. 1 Edison, Kern Co.	33-29-29	4,000	hd. sd. drilling
Symark Oil Co., No. 1 Edison, Kern Co.	24-29-29	2,130	suspended
Sayre, F. M., No. 1 Edison, Kern Co.	5-30-29	4,220	fishing
Helen Pet., No. 1 Jasmine, Kern Co.	23-25-27	2,220	suspended
Shell, No. 1 Semitropic, Kern Co.	17-27-23	rig	rigging up
Moran & DeCamp, No. 1 Mojave, Kern Co.	26-10-14	500	hd. sd. drilling
Bardeen, H. A., No. 1 San Emidio, Kern Co.	18-10-23	890	hr. sh. drilling
Bardeen, H. A., No. 2 San Emidio, Kern Co.	10-10-23	1,400	sd. sh. drilling
Richfield, No. 1 Kreyenhagen, Fresno Co.	33-22-16	...	grading
Currency Pet. Co., No. 1 Jacalitos, Fresno Co.	28-21-14	3,680	cleaning out
Knudsen, John, No. 1 Jacalitos, Fresno Co.	14-21-14	1,650	gr. sd. drilling
Petroleum Securities, No. 2 Huron, Fresno Co.	28-20-16	7,390	suspended
Fresno Madera Oil Co., No. 1 Clovis, Fresno Co.	18-12-21	4,330	sd. sh. drilling
Rio Grande, No. 1 Kerman, Fresno Co.	35-13-16	3,716	sd. sh. drilling
Western Gulf, No. 1 Penoche Valley, Fresno Co.	26-15-12	4,680	sd. sh. drilling
Midwest Refining Co., No. 1 Huasna, San Luis Obispo Co.	34-31-15	4,355	gr. sd. drilling
Panorama Oil Co., well No. 1, San Luis Obispo Co.	7-31-21	4,019	fishing
Paso Robles Synd., No. 1 Creston, San Luis Obispo Co.	27-27-11	3,820	reaming
Union, No. 1 King City, Monterey Co.	8-22- 8	3,250	suspended
Standard, No. 1 King City, Monterey Co.	23-22- 7	4,340	hd. sd. drilling
Pacific Inland Oil Co., No. 1 Parkfield, Monterey Co.	19-23-15	181	suspended
O'Donnell, J. E., No. 1 Dudley Ridge, Kings Co.	7-23-20	4,065	sd. sh. drilling
Penn Western, No. 1 Tulare Lake, Kings Co.	24-21-18	1,338	suspended
Wellport Oil Co., No. 1 Devils Den, Kings Co.	9-24-17	3,664	sd. sh. drilling
Twin State Oil Co., No. 1 Point Arena, Mendocino Co.	14-12-17	3,270	hd. sd. drilling
Barnhart Trust, No. 1 Oakdale, San Joaquin Co.	3- 2-10	3,012	sd. sh. drilling
White, Roy, No. 1 Pixley, Tulare Co.	8-23-26	4,020	suspended
Terra Bella Oil Co., No. 1 Porterville, Tulare Co.	35-22-27	900	recemented

Three New Locations in Hobbs Area

Half a Dozen New Wells Have Started Spudding, Several Colorado Wildcats Drilling Close to Objective. New Tests in Wyoming

By Tolbert R. Ingram
Staff Correspondent, Rocky Mountain area

DENVER, Colo., May 6.—Title situation in regard to numerous leases on state land in New Mexico has been benefited by decision of the supreme court affirming the lower court in the Atlantic Oil Producing Co.'s case. It held that new leases under the **1929 law** issued in lieu of those taken out under the 1927 act shall be for a full five-year period instead of the unexpired time. Three new locations were made in the Hobbs area, one each by the California Co., the Midwest Refining Co. and George F. Getty, Inc. Half a dozen new wells have commenced spudding. Cranfill & Reynolds' No. 2-B State, in the Lea Pool, doubled its production when deepened 14 feet.

A number of Colorado wildcats are drilling close to the objective horizons though no completions were reported. The Continental Oil Co.'s Pipe Springs test in Bent County is in granite wash at 5,980 feet and has put on a control head as a precautionary measure. An unusually early spring is causing a number of wells idle during the winter to resume.

The Garland and Byron Domes in Wyoming are to be tested to the Madison lime in operations which are being resumed by the Ohio Oil Co. and the Producers & Refiners Corp. The deep test in Salt Creek is about ready to drill into the Madison lime and the Producers & Refiners is to make a test of the Tensleep in one of its gas wells on the Wertz Dome in Carbon County.

NEW MEXICO

An important decision affecting leases on state land in New Mexico was rendered on April 21 by the state supreme court in the case of the Atlantic Oil Producing Co. versus A. D. Crile, commissioner of public lands. Last December the Atlantic company filed a mandamus suit in the district court to compel the land commissioner to issue a full five-year lease on land in a restricted area in Lea County instead of for the unexpired term of a lease then held. The old lease expired by limitation on January 23, 1930. A legislative act of 1929 repealed the law of 1927 affecting the leasing of state land and contained a clause in Section 14 which provided for the surrender of old leases in good form and taking out of new leases "in lieu of" the old leases. In other words, the new law confirmed and recognized the leases made under the old laws where they were in good standing and provides for the substitution of new leases in their places. The commissioner declined to issue a full five-year lease in lieu of the one surrendered and took the position that the new lease should be for only the unexpired period. District Judge Reed Holloman at Santa Fe ruled that leaseholders who convert their leases under Section 14 of the act of 1929 were entitled to a new lease for a full five-year period. On April 21, the supreme court affirmed the decision of the lower court and the next day Commissioner Crile announced that he would not file a petition for a rehearing but will proceed at once to carry out the provisions of the mandate. The final determination of the case removes a cloud from the title to numerous leases in New Mexico.

The Phillips Petroleum Co. has had its engineers in Lea County making preliminary surveys with a view to the construction of a natural gasoline plant in that area. This company built the first plant located in the State when it constructed its plant at Artesia. The Texas Pacific Coal & Oil Co. recently announced its intentions of constructing a gasoline plant near its producers in Lea County.

Hobbs Area—Lea County

Three new locations in the Hobbs area were announced this week. These were the California Co.'s No. 1 Grimes, NW SE SE, Section 29-18-38; George F. Getty, Inc.'s No. 1 McKinley, SW cor. NE, Section 30-18-38; and the Midwest Refining Co.'s No. 8 State, near the C NW NW, Section 4-19-38. The California Co.'s location is an offset on the south to the Tidal Oil Co.'s No. 1 Grimes and is the first to be made by that company in the Hobbs Pool. It is spotted 990 feet from the east line and 990 feet from the south line. It is three-fourths of a mile to the southeast of the Humble Oil & Refining Co.'s No. 1 Bowers. The Getty location is the first in that area to be made by that company and is one of four offsets in the center of Section 30, all of which are spaced 660 feet apart and are only half a mile from the Humble producer. The Midwest's new location is an offset on the east to the Sun Oil Co.'s No. 1 McKinley. Two offsets to these wells probably will be made by the Continental Oil Co. and the Amerada Petroleum Corp. This makes five active operations for the Midwest in the Hobbs Pool.

The Midwest Refining Co.'s No. 36 State, SE cor. SW, Section 10-19-38, is drilling at 1,040 feet in red rock, and its No. 1 State, NE cor. NW, Section 15-19-38, has derrick completed. The Midwest's No. 13 State, SE NE NW, Section 15-19-38, is bottomed in the red beds at 140 feet and is rigging up rotary. The 16-inch is at 129 feet. The Midwest's No. 33 Byers, SE SW NE, Section 4-19-38, is drilling at 460 feet in red beds and hard sand. The 16-inch was cemented at 152 feet. The Prairie Oil & Gas Co.'s No. 1 Crump, NW cor. NE, Section 15-19-38, is spudding at 80 feet in gypsum. It commenced spudding on April 23. The same company's No. 2 Crump, SW NW NE, Section 15-19-38, commenced spudding on April 21 and is bottomed at 166 feet in gypsum, and its No. 1 Selman, NW SW NE, Section 15-19-38, commenced spudding on April 20 and is bottomed at 125 feet in red rock. The Shell Petroleum Corp.'s No. 1 State, SE SW NE, Section 32-18-38, which made 279 bbls. of oil in 18 hours at 3,136-44 feet, is coring in lime at 3,176 feet, and its No. 1 McKinley, SW cor., Section 19-18-38, is bottomed at 2,793 feet in lime and anhydrite and is running the 9-inch. It bottomed the salt at 2,727 feet and topped the lime at 2,785 feet. The elevation is 3,662 feet. The Walker Oil Corp.'s No. 2 Terry, SW cor. SE, Section 10-19-38, spudded on April 19 and is bottomed at 105 feet in red rock and is rigging up rotary. The Humble Oil & Refining Co.'s No. 2 Bowers, NW cor. SE, Section 30-18-38, lost the bit at 103 feet and skidded the rig 25 feet to the north. The new hole, to be known as No. 2-A Bowers, spudded to 100 feet with a machine and is moving in rig. The Humble's No. 3 Bowers, SW cor., Section 29-18-38, is ready to spud with spudder and is moving in a rotary, and its No. 4 Bowers, SE cor., Section 30-18-38, has completed cellar. The Amerada Petroleum Corp.'s No. 1 McKinley, NW cor., Section 30-18-38, is spudding at 50 feet, and its No. 2 McKinley, SE cor. NW, Section 30-18-38, is bottomed at 106 feet in the red beds and fishing for rock bit and 6-inch drill stem. It commenced spudding on April 20. The Gypsy Oil Co.'s No. 1 Grimes, NW cor., Section 32-18-38, is spudding at 80 feet. The Texas Production Co.'s No. 1-C State, NE cor., Section 25-18-37, is digging cellar, and the Texas Pacific Coal & Oil Co.'s No. 1-G State, SE cor., Section 24-18-37, set the 12½-inch at 1,530 feet. The Landreth Production Co.'s No. 1 State, SW cor. SE (cor.), Section 7-18-38, is rigging up rotary. The Ohio Oil Co.'s No. 1 State-Northrup, NE NW SE, Section 32-18-38, is bottomed at 2,833 feet in hard sand, where it had 2,000,000 feet of gas per day, and is rigging up rotary. Fisher & Lowrie's No. 1 State, NE cor. NW, Section 11-18-36, on the west side of the Hobbs area, is reported to have encountered sulphur water at 4,750 feet. It had about 250,000 feet of gas per day at 4,695 feet. It was about 1,000 feet in the lime.

Lea Area—Lea County

Cranfill & Reynolds' No. 2-B State, NW cor., Lot 9, Section 2-21-33, which was completed last December at a total depth of 3,765 feet and made 250 bbls. the first 24 hours, was drilled deeper and recompleted at 3,779 feet. There was an increase in oil at 3,769-74 feet and 3,776-79 feet and swabbed 30 bbls. an hour, or more than doubling the original output. There are no drilling wells in this pool at present.

Eunice Area—Lea County

The Continental Oil Co.'s No. 1 William Meyer, SW cor. NW, Section 28-22-36, which has been held up at 3,750 feet by a bad fishing job since last December, has been abandoned by the contractor at that depth. It had considerable gas in several horizons. It tested 20,000,000 feet a day at 3,375 feet and made 10,000,000 feet at 3,750 feet. The Empire Gas & Fuel Co.'s No. 1 Closson, NE NW SE, Section 6-22-36, is drilling at 4,127 feet in lime and averaging 132 bbls. of oil per day with 16 per cent mud and water. The water was at 3,975 feet.

Cooper Area—Lea County

Cranfill & Reynolds' No. 1-C State, SW SE SW, Section 16-23-36, half a mile northeast of the Texas Pacific Coal & Oil Co.'s producer, No. 3 State, is drilling at 3,823 feet in sand and averaging 60 bbls. of fluid per 12 hours, of which 26 per cent is sulphur water. The sulphur water showed up at 3,810-20 feet.

Jal Area—Lea County

The Midwest Refining Co.'s No. 34 C. Farnsworth, SW SE SE, Section 13-26-36, commenced spudding April 21 and is drilling at 240 feet. This is the only drilling well in the Jal area, the Midwest's No. 19 Farnsworth, NW SW SW, Section 14-26-37, not yet spudding.

Maljamar Area—Lea County

The Maljamar Oil & Gas Co.'s No. 3 Baish, SE NE NW, Section 21-17-32, is drilling at 2,425 feet.

Southwest Area—Eddy County

F. B. Van Horn's No. 1 Santa Fe, SE SE, Section 18-19-26, is drilling at 1,890 feet, and R. D. Compton's No. 1 State, SW NW, Section 2-20-25, is drilling at 1,700 feet.

Maljamar Area—Eddy County

Flynn, Welch & Yates' No. 2 Stevens, NW NE SW, Section 13-17-30, is standing at 3,250 feet, and Henderson, Dexter & Blair's No. 1 Grier, SW cor. NW, Section 21-16-31, is drilling at 2,800 feet. Lockhart & Co.'s No. 2 Parke, NE cor.

(Continued on Page 180)

HALF DOZEN NEW PRODUCERS IN THE TURNER VALLEY FIELD

By Victor Lauriston
Staff Correspondent, Canadian Fields

CHATHAM, Ontario, May 3.—Following a quiet period, the Turner Valley Field has been featured with half a dozen new producers in the deep lime. In the South Turner Valley, three independent tests have apparently got production, almost simultaneously, in Section 20-19-2w5. All three are in the south half of this productive section.

In the extreme southeast corner, Wellington Oils' No. 1, LSD 1, got the second porous horizon around 255 feet in the lime at 4,915 feet, when the previous wet gas flow of 8,000,000 feet a day increased to around 20,000,000 feet. The sudden burst of gas jammed the tools, after which production froze off. There is every prospect of developing a good commercial producer. On LSD 8, due north of Wellington's No. 1, Freehold Oil Corp.'s No. 2 got a strong gas flow, around 12,000,000 feet, at around 4,290 feet, or 190 feet in the lime. At this depth it is a commercial well, but is being deepened for larger production.

In LSD 5, Section 20-19-2w5, west of Freehold's No. 2, Alberta Pacific Consolidated's No. 2 blew into fair production 456 feet in the lime at 5,620 feet, but is deepening around 5,653 feet. Initial flow was about 5,000,000 feet.

In the Central Turner Valley, Freeman-Lundy Syndicate's No. 1, LSD 10, Section 1-20-3w5, is drilling at 385 feet in the lime around 5,283 feet with a wet gas flow gradually increased to 12,000,000 feet but will be drilled a little deeper.

Imperial Tests

Imperial Oil, Ltd., has finished two small producers. Mayland Oil Co.'s No. 1, LSD 10, Section 17-19-2w5, was put on production test after a shot at 6,242 feet. It made about 4,000,000 to 5,000,000 feet of wet gas with a small crude naphtha recovery. In the central field, Royalite Oil Co.'s No. 16, LSD 2, Section 12-20-3w5, is a small commercial producer at 6,230 feet. At this depth it is 1,527 feet in the lime, and may be given a shot.

The latest Imperial report shows 15 wells active in the Turner Valley Field. In South Turner Valley, Hargal Oils' No. 1, Section 20-19-2w5, is drilling 191 feet in the lime at 5,249 feet and apparently close to production.

In the far south, Sterling Pacific Oil Co.'s No. 2 will be drilled by Imperial Oil, Ltd., but no location has been made yet pending the outcome of near-by tests. Sterling Pacific's No. 1, in LSD 15, Section 33-18-2w5, developed a small production when shot, after drilling through the lime into shale.

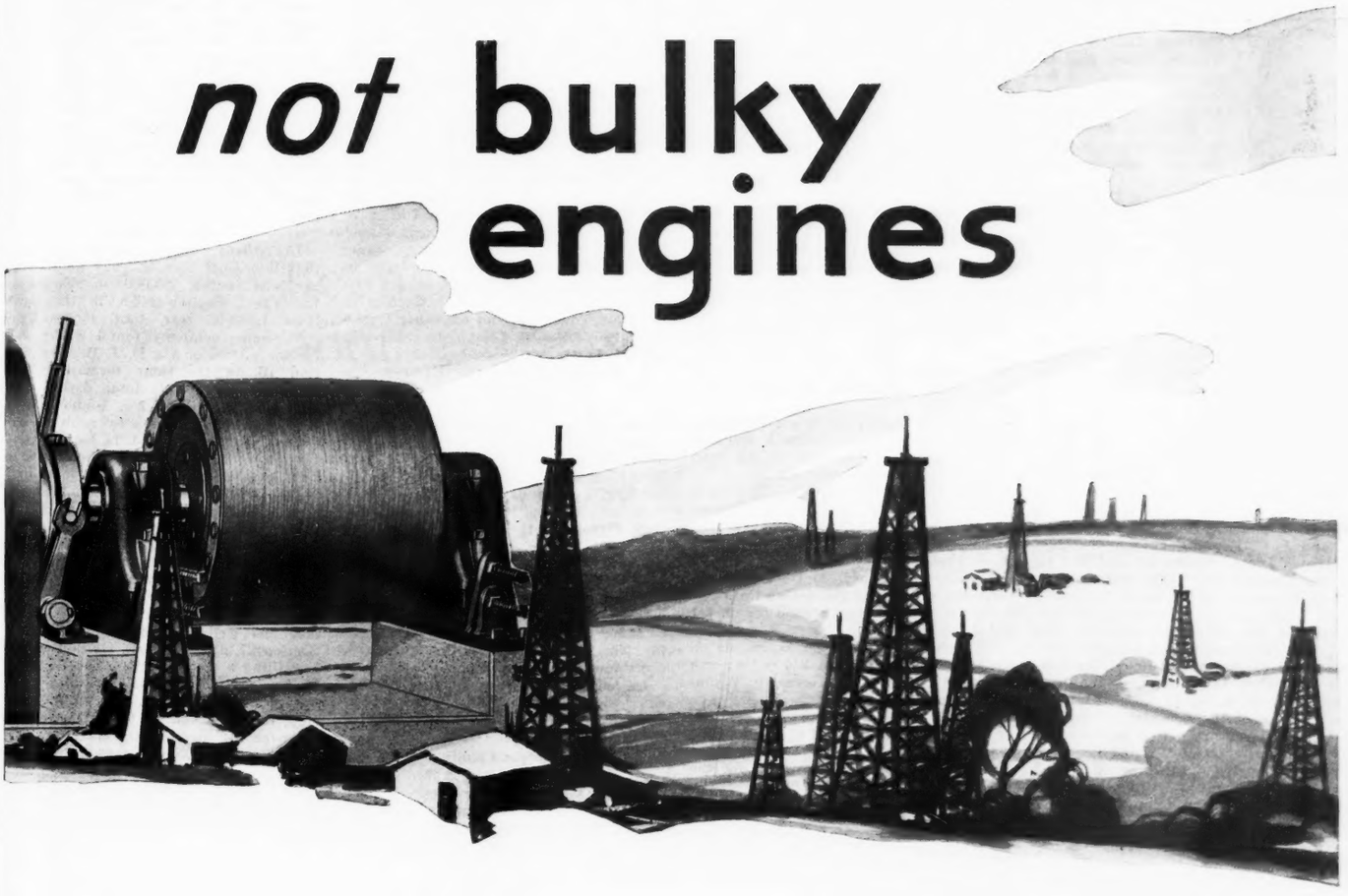
Royalite Report

Shareholders of Royalite Oil Co. held their annual meeting at Calgary when the financial statement showed profits of $1,159,795 for 1929, compared with $670,413 the previous year. The company has been in operation for nearly 10 years, its expenditures in that period reaching $7,135,944. The gross income in 1929 amounted to $2,485,738 against $1,724,488 the previous year. The 1929 in-

(Continued on Page 166)

ENGINES

not bulky engines



If you have been buying bulk and sacrificing portability, get the facts on the new 275 hp. Waukesha. A new bulletin describes it. Also in sizes as small as 25 hp. ***Waukesha Motor Company, Waukesha, Wis.; In the Oil Fields: C. F. Camp Co., Tulsa; Portable Rig Co., Houston; Bradford Supply Co., Bradford, Pa. Waukesha Industrial Engine Sales and Service Co., San Francisco and Los Angeles.***

WAUKESHA

ENGINES

Central Ohio Continues Its Activity

Lima, Indiana and Illinois Fields Expected to Show New Interest When Weather Permits. Old Wells Abandoned

By Whit
Staff Correspondent, Central West Fields

FINDLAY, Ohio, May 5.—Of the Central West group, the Central Ohio Field maintains the greatest activity at this time, as the Lima Field of northwestern Ohio, Indiana and Illinois are not doing any great amount of work, but according to operators there will be a revival as soon as the wet weather will permit.

In the old Lima Field of northwestern Ohio a large number of old producing wells are being abandoned and the material from them will be utilized for the drilling of new wells. In the Prairie Depot Field, Montgomery Township, Wood County, Noonemaker and others abandoned Nos. 1, 2, 3, 5 and 7 J. J. Ames, Section 8. C. H. Knisely did the same with Nos. 1, 2, 3, 4 and 5 on the North Ohio Oil Co. lease, Section 13. D. J. Klingman pulled out No. 4 Crossman, Section 11. The Ohio Oil Co. abandoned No. 2 Mary Richards, Section 14; No. 9 Crawford-Romler, Section 21, and No. 3 Andrew Deiter, Section 28. In Freedom Township, adjoining Montgomery, August Bushman and others pulled out Nos. 1 and 2 Henry Schwaise, Section 9, and the Ohio Oil Co. No. 19 H. and J. C. Bruning, Section 34; No. 12 Henry Diehl, Section 28, and No. 11 F. H. Hoodlebrink, same section. In Henry Township, in the North Baltimore Field, same county, the Ohio Oil Co. abandoned No. 19 M. Auverter, Section 11. This farm was among the large producing oil farms in the field. In Liberty Township, the Ohio Oil Co. abandoned Nos. 2, 6, 9, 11 and 14 J. W. Powell farm, Section 3, which was another farm of large production in the early days and southwest of Bowling Green.

Curtis Jameson is drilling a second test on his own farm, Section 15, Webster Township, Wood County, the only new well under way in the county at this time.

In Hancock County, Portage Township, Povenmire and Benson abandoned Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 9 C. A. Cole, and Nos. 1, 2, 4, 5, 6, 7, 8 and 9 E. J. Cole, both leases being in Section 34.

In Allen County, Bath Township, C. A. & A. J. Peavey's No. 3 well, 700 feet from north line and 850 feet from west line of the C. A. Hoover, N half, Section 24, Bath Township, northeast of Lima, pumped 15 bbls. initial at 1,352 feet, or 35 feet in the Trenton. Roalman & Pease are drilling No. 2 Nancy E. Leedy, Section 14, same township. In Marion Township, the Ohio Oil Co. abandoned Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 9 Charles Gremling, Section 18. Kelley Brothers are starting a wildcat on the Earl D. Brown, Section 19, Perry Township.

C. Tester and others are drilling on the Gus Kohler, Section 36, Moulton Township, Auglaize County. T. M. McNadden and others are drilling on the Caroline Easterly, Section 10, Noble Township, same county.

Three new wells are drilling in Butler Township, Mercer County: Home Oil & Gas Co.'s No. 2 George Wenning, SE. Section 31; A. A. Lauber's No. 2 Frank Bruns, Section 21, and the Recovery Oil & Gas Co.'s No. 1 J. S. Burch, Section 17.

In Sandusky County, Ballville Township, McPherson and others are drilling No. 1 E. Whitman, Section 31. In Madison Township, E. S. Johnston abandoned No. 3 C. Beeker, and Nos. 1 and 2 T. Taylor, Section 12, and in Scott Township, Charles W. Putnam pulled out No. 13 Allen Winchell, Section 31.

In the Tiffin Field, Seneca County, Jackson Township, Irvin Waltermier's No. 8 J. T. Waltermier, Section 21, pumped an initial of 5 bbls. Kansas-Ohio Oil & Gas Co. is drilling No. 4 Clarence P. Dillon farm, and Shoemaker and others are drilling on the A. Ash farm, Section 36. Onsel Brothers abandoned Nos. 16 and 17 Lang & Dickens and No. 13 Priscilla Dickens, both in Section 21, also pulled out No. 3 Elmer Kissling, Section 10. J. H. Murphy & Sons abandoned Nos. 1, 2 and 3 F. L. Bork, Section 21, Clinton Township. Donnels and others are drilling on the W. M. Grimes, Section 12, Hopewell Township, and J. H. Murphy & Sons are drilling on the S. Wolf, Section 1, same township. C. L. Williams is reported drilling on the P. Stuckey, Section 32, Bloom Township. C. L. Messer and others are starting a second test on the C. E. Dennis, Section 30, Pleasants Township, same county.

Near Oak Harbor, in Salem Township, Ottawa County, W. C. Richards and others of Fremont are drilling on the John G. Gnepper farm, Section 19.

A. B. Ernst and others are drilling a second test on the Ben Heilers, Section 15, Cynthian Township, Shelby County, at the far south part of the old Trenton Rock Field.

In Hardin County, McDonald Township, the Roundhead Oil & Gas Co.'s No. 8 on the Erwin Hites, is good for only 1 bbl. initial.

Columbus Oil & Gas Co. is drilling on the Harvey Wonder farm, 2½ miles north of Carey, in Crawford Township, Wyandot County.

William Elroy Dodge, prominent former oil operator of Tiffin, Ohio, who leased a block of 4,000 acres during the winter near Tiffin and arranged for the drilling of two tests, was found dead in bed at his home in Tiffin two weeks ago. Mr. Dodge was 66 years of age, and leaves a wife, formerly Miss Fith McDonogh Leister, a member of a widely known family. Apoplexy was the cause of his death.

CENTRAL OHIO

The Central Ohio Field for the week showed 19 completions, 8 producers, with an initial production of 315 bbls., 6 dry holes and 5 gas wells. New work starting comprised 13 locations and 30 drilling, a total of 43 in new work. Morgan County, just outside the Central Ohio belt, is credited with one completion, a light gas well, by the Ohio Fuel Gas Co. in No. 1-5,018 S. B. Zumbro lease, fractional Section 12, Marion Township. The gas was found in the Salt sand from 872 to 900 feet. Buck Run Oil is drilling on the George H. Putnam, Section 2, Union Township, same county, while in Marion Township the Ohio Fuel Gas Co. is drilling No. 1-5,098 Hirman Hart farm, Section 34, same county.

In Ashland County, Sullivan Township, the Ohio Fuel Gas Co. has a dry hole on the J. T. Smith, Lot 68, there being no sand found in the hole. Same company is drilling No. 1-5,110 M. W. Connell, Section 6, Jackson Township, same county. The Kemrow Co. drilled an average gas well on the J. O. Latter, Section 2, Montgomery Township, at from 2,750-57 feet, and same company made a location on the Willard S. Wiley, Section 1, and the Ohio Fuel Gas Co. made a location for No. 1-5,135 J. F. Long, Section 2. Crownshield and others are drilling No. 5 Martie Wheeler, Section 28. In Lake Township, Robinson and others' No. 5 John P. Smith, Section 9, is a fair gas well from 631 to 646 feet. Smith and others are drilling on the Henry Mosher, Section 22. Stewart and others are drilling No. 3 F. P. Myers, Section 29, Perry Township. In Mifflin Township, Robinson and others are drilling No. 4 James Culler, Section 25.

Medina County

In Medina County no new completions are reported, the only change is the Ohio Fuel Gas Co. started drilling No. 1-5,117 Walter E. Buck, Section 29, Harrisville Township. The only change in Lorain County is the Kemrow Co. drilling on the F. L. and W. P. Chamberlain, Lot 47, Ridgeville Township, and Dillion & Frederick drilling on the Thomas Pound heirs, Lot 93, Easton Township, same county. Two new wells are started in Wayne County. One is Barnhart and others' No. 5 K. W. Taylor, Section 8, Congress Township, and the other Curtis & Eakens' No. 2 Joseph B. Sherrick, Section 1, Chester Township.

In Holmes County the Kemrow Co. found a showing of oil from 3,361-78 feet in No. 3 on the Louisa Conn, Lot 13, Hardy Township, then found another sand from 3,400-18 feet, which was dry and undecided whether to go deeper. East Ohio Gas Co. is drilling No. 4 C. L. Sterling, Lot 36, same township.

In the Cleveland Field, Olmstead Township, Cuyahoga, there is a little drilling campaign, where the North Olmstead Bank drilled in Nos. 1, 2 and 3 on the Merkle, with production of 5, 4 and 8 bbls., respectively. Ohio Fuel Gas Co. is drilling No. 1-5,087 Nathan Seigel, Lot 5, same township, and made a location for No. 1-5,134 Charles Root, tract 3, same township.

In Ashtabula County, Sheffield Township, the Ohio Fuel Gas Co. had showing of both oil and gas in No. 1-4,977 George W. Kelsey, Lot 19.

Summitt County

In Summitt County, Franklin Township, F. A. Brendall and others have what shows for a nice gas well on the E. A. Fairchilds, Section 25. In this well a stray sand was found from 3,997 to 4,002 feet, red sand 4,002-43 feet, oil show from 4,046-56 feet and got the gas in the Clinton lime from 4,056-81 feet. East Ohio Gas Co. is starting a test on the William Sorrick, Section 24, same township. Same company is drilling No. 3 F. C. Keifer, Section 18, Greene Township, and F. A. Brendall and others are drilling on the Margaret Silknetter, Section 31, same township.

In Licking County, Fallsburg Township, Ohio Fuel Gas Co. is drilling on the A. L. Gruber, Section 13. Hope Construction & Refining Co. is drilling No. 1 A. L. Wright, Section 14, Perry Township, and No. 4 on the L. C. Griffin, Section 24, same township. Pure Oil Co. is starting No. 3 Homer C. Priest in Hanover Township.

In Muskingum County, Hopewell Township, the Hope Construction & Refining Co.'s test on the G. W. Wilking, Section 4, is reported at 4 bbls. natural from 3,216-67 feet. Same company is drilling No. 5 Joseph Varner, Section 5, and the Hopewell Gas & Fuel Co. is drilling No. 3 James M. Sparks, same section. Atha Drilling Co. is drilling a second test on the W. H. Atha in Falls Township. The Atha company is drilling on the Horace Willwork in the third-quarter section of Washington Township. In Clay Township, William Kline and others' No. 5 Ramsbottom, Section 3, rated good for 160 bbls. initial, and Anderson and others' No. 1 State of Ohio land, same section, at 90 bbls. Crawley and others are drilling No. 3 Nelson McCoy, same section, and Craig, Adair and others are starting No. 1 Earl Baughman, same section. In Perry Township the Wittmer Properties trustee got a dry hole on the Thomas Treahay and others' property, Section 5, at a total depth of 4,050 feet, also a duster on the Wilmer A. Dailey, Section 15, at a total depth of 4,152 feet. Same parties are drilling on the Emma V. Buchannan, Section 11, and the Ohio Fuel Gas Co. made a location on the W. H. Urban, Lots 12 and 19, same township. Fritz Oil & Gas Co. found a nice gas well on the Harry R. Swingle, Section 28, Brush Creek Township, in the Clinton from 4,065 to 4,100 feet.

Athens County

In Athens County, Ames Township, the Ohio Fuel Gas Co. has an average gas well in No. 2-5,000 on the Emma H. Wyatt, Section 1-7-8, in the Berea from 1,433-52 feet, total depth 1,457 feet. Same company found a dry hole in No. 3-5,014 on the F. J. Beasley, Section 16, in the same formation from 1,399 to 1,417 feet, total depth 1,423 feet, and is drilling No. 1-5,085 G. L. Fleming, Section 4, same township. Townsend Oil & Gas Co.'s No. 11 Isaac Castel, Section 30, Alexander Township, is a light gas well. Park Bowser is drilling No. 2 Fred R. Cooley, Section 26, same township. Hocking Valley Products Co. is drilling No. 7 Arnot heirs, Section 35, York Township, and the Ohio Fuel Gas Co. located No. 2 Alexander Justice, Section 4, Carthage Township.

In Tuscarawas County, Oxford Township, the Traders Oil & Gas Co. has a nice gas well on the Quillan-Caldwell, Section 21, at 3,544 feet. Gordon Oil Co. is drilling a second test on the Sarah E. Ripley, Section 1, same township.

In Fairfield County, Pleasants Township, the City Natural Gas Works found a duster in No. 3 Henry Hartman, Section 33, from 2,450-65 feet, total depth 2,470 feet.

In Guernsey County, Wheeling Township, East Ohio Gas Co.'s No. 8 C. and A. Gray, Section 10, reported good for 40 bbls. initial, the pay being found from 3,533-36 feet, total depth 3,539 feet. Same company is drilling a test on the Clarence Quillan, same section. Ohio Fuel Gas Co. found a dry hole in No. 2-5,040 Simon Umstatt, Section 2, same township, at 3,674 feet.

In Belmont County, Somerset Township, William C. McBride made a location on the Howell-Dement, Section 1. Central Gas Co. made a location for No. 2 D. L. Hogue, same section, and Peters & Patterson made a location on the W. C. Wheatley, Section 27-28, same township. Clyde Worstell is drilling on the W. J. Clark heirs, Section 22, Richland Township.

INDIANA

Indications are that there will be a revival of development work in western part of Indiana in what is known as the Kankakee Valley, southwest of South Bend, where shallow natural lubricating crude was found in good quantities more than 30 years ago. A portion of this valley is practically valueless so far as Trenton oil is concerned, owing to fresh water having got into that formation, but it affects only a strip of territory running from the northwest to southeast, the Trenton being found around 900 to 1,000 feet. The water trouble is found in the area of Medarysville and Francisville, but gas has been found in the Niagara formation that is found from 600 to 700 feet. The Mich-Ohio Oil Co. has a well about 5 miles west of Francisville that makes a very good showing, but has been shut in for some time. No completions were reported from any area of Indiana during

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A further important fact:

When you install the Dubbs Process you are not taking a license from a competitor and adding to his profits

Instead, Universal's staff of more than 300 picked men is your staff, devoted to the promotion of your business and profit

And all this under a license contract which guarantees you complete, unrestricted patent immunity

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

Southeast Ohio Responsible for Gain

Increased New Production 1,367 Bbls. in March. Fair Well in Clay County, West Virginia. Tuscarawas County, Ohio, Busy

By D. S. Wakenight
Staff Correspondent, Eastern Fields

PITTSBURGH, Pa., May 5.—Operations in the eestern fields will show some improvement over the previous month in the amount of new production and new work under way. Fewer wells have been completed in April than in March. The deep sand territory in Southeast Ohio is responsible for the increased new production, amounting to 1,367 bbls. more than in March.

The week was disappointing in the number and size of the wells completed. Large producers were almost a minus quantity. Had it not have been for the deep sand territory in Southeast Ohio there would have been none. West Virginia and Southwest Pennsylvania completed nothing better than light pumpers and the usual number of gas wells and dry holes. Muskingum County in Southeast Ohio is still leading in new work starting and under way. Boone and Calhoun Counties in West Virginia are still quite active and Greene County in Southwest Pennsylvania has more work than all others combined.

SOUTHEAST OHIO

In the northeast quarter of Section 4, Harrison Township, Perry County, Ohio, McClay Brothers & Co. completed in the Clinton sand No. 6 on the Charles Brown farm. It produced 165 bbls. the first 24 hours after shot.

In the southwest quarter of Section 4, Hopewell Township, Muskingum County, the Hope Construction & Refining Co. completed and shot in the Clinton sand a test on the George Williams farm. It produced 60 bbls. the first 24 hours. In the southeast quarter of Section 11, Wheeling Township, Guernsey County, the East Ohio Producing & Refining Co. completed No. 3 on the E. C. and Verna A. Quinlan farm. It produced 40 barrels first 24 hours after drilled into the Niagara Lime. In the southwest quarter of section 28, Rush Creek Township, the Fritz Oil Co. completed a test on the H. T. Swingle farm. It is a gusher in the Clinton sand.

Tuscarawas County is coming to the front with some fair producers, after remaining idle for several years. In the southwest quarter of section 32, Washington Township, Tuscarawas County, the Gordon Oil Co. and others completed a test on the Martha Carrol farm. It produced 125 bbls. the first 24 hours after drilled into the Niagara lime. In the southwest quarter of Lot 35, same Township, the same company and others completed in the same formation a second test on the Sarah Huffman farm. It produced 100 bbls. the first 24 hours. In the southwest quarter of Lot 21, Oxford Township, the Gordon Oil Co. completed in the Niagara Lime a test on the J. H. Davis farm. It is a gasser for 2,000,000 feet.

Holmes and Washington County

In Section 13, Hardy Township, Holmes County, the Kemrow Co. completed No. 3 on the Louisa Conn farm, a 5-bbl. pumper in the Clinton sand. In Section 8, Palmer Township, Washington County, Robert W. Turnehey & Co. completed No. 10 on the Myron E. Leasure farm. It produced 18 bbls. the first 24 hours after shot in the Peeker sand. It will settle down to a 3 or 4-barrel pumper.

In the southeast quarter of Section 5, Harrison Township, Perry County, Floyd Edwards and others completed a test on the Samuel Guy farm. It has been shot in the Clinton sand and is a 5-barrel pumper. At Boling Mills, Section 4, Knox Township, Vinton County, the Co-operative Oil Co. has completed a test on the P. Throckmorton farm. It is a duster in the Berea grit.

In the south end of Lot 246, Sutton Township, the Twenty-Five Association, Inc., has started to drill on the Clark Jeriden farm. In the southwest quarter of Section 11, same Township, Delbert Bashelor has started to drill a second test on the John and Nellie Arnett farm.

Monroe County

In Section 2, Bethel Township, Monroe County, Edward Bryan and others are drilling on the Kensey heirs' farm. In Summit Township, J. H. Weber & Co. are drilling on the M. McFlesher farm. In Section 5, Washington Township, Lucas & Cobb are drilling on the H. H. Smith farm. In Washington Township, Hocking County, the Gordon Oil Co. has a rig up on the Charles E. Goodwin farm. The Pure Oil Co. has a rig up on the Elmer Hart farm. The Preston Oil Co. is drilling on the Eliza Beery farm. In Pike Township, Coshocton County, Spindle, Donnan & Co. have a rig up on the McKee farm. In Section 16, Brush Creek Township, Muskingum County, the Davis Oil Co. is drilling on the Thomas B. Weaver farm. In Perry Township, the Preston Oil Co. has a rig up on the John C. Hicks farm. In the same Township, Wittmer Properties Oil & Gas Co. has a rig up on the J. R. McCuden farm.

In the southeast quarter of Section 11, Wheeling Township, Guernsey County, the East Ohio Producing & Refining Co. has completed in the Niagara Lime No. 5 on the E. C. and Verna A. Quillen farm. It produced 40 bbls. the first 24 hours after drilled into a pay at a total depth of 3,550 feet.

Hocking County

In the southeast quarter of Section 24, Washington Township, Hocking County, the Gordon Oil Co. has a duster in the Clinton sand at No. 11 on the Robert Stone farm. In Section 35, Salem Township, Monroe County, the Wittmer Oil & Gas Co. have a duster on the Burkholter farm. In Jackson Township, Perry County, the Kessling Drilling Co. had the same luck on the M. Donohour farm.

In Harrison Township, Perry County, R. C. Miller & Co. are drilling a second test on the J. M. Batton farm. In Clayton Township, Ralph Bros. Inc., have a gasser on the C. F. L. Lafollette farm. Walsmith & Webb have a gasser on the A. F. Early farm.

In Section 4, Jackson Township, Muskingum County, the Pure Oil Co.'s No. 4 on the Jacob Ashcraft farm is a 6-bbl. pumper in the Clinton sand. In Brush Creek Township, the Fritz Oil Co.'s test on the W. T. Swingle farm is a gasser. In Section 6, Richland Township, Holmes County the East Ohio Gas Co. has a gasser on the Phoebe Busy farm. In Hardy Township, the same company has a rig up on the S. H. Sterling farm.

In Cambridge Township, Guernsey County, the Preston Oil Co. has rigs up on the Issaac J. Oldham and Hahala Johnson farms. In Wheeling Township, the Ohio Fuel Gas Co. has a duster at No.3 on the J. W. Alloway farm. The East Ohio Producing & Refining Co. is drilling on the E. E. Quinlan farm.

Muskingum County

In Washington Township, Muskingum County, the Atha Oil Co. is drilling tests on the Bateman heirs and J. H. Walworth farms. The Wittmer Oil & Gas Properties Co. has a rig up on the J. S. Robinson farm. In the same township, Heber Slack has a rig up on his own farm. In Perry Township the Ohio Fuel Gas Co. has a rig up on the Edwin Allen farm. Longfellow & Co. are due in the sand on the L. B. Johnson farm. The Wittmer Oil & Gas Properties Co. has started to drill on the Robert Bachman farm. The Atha Oil Co. has the rig up for a second test on the L. M. Bryan farm.

WEST VIRGINIA

In Paw Paw district, Marion County, West Virginia, the Owens Bottle & Machine Co. completed in the Fourth sand a second test on the Edgar Foz farm. In Cass district, Monongalia County, the Convex Gas Co. has drilled a test on the F. L. Norhees farm through the Elizabeth sand. It is a duster, but showing a little gas.

In Liberty district, Marshall County, the Manufacturers Light & Heat Co. has a gasser in the Gordon sand on the W. H. Howard farm. In the same district the same company has a gasser in the same formation on the William Hinkle farm. In Clay district, Ritchie County, Choguill & Ray have a duster at No. 7 on the J. L. McCullough farm. In Grant district the Hope Construction & Refining Co. has a duster on the Matin McFarlan farm. In Troy district, Gilmer County, the Giles Oil & Gas Co. has a duster on the J. W. Staley farm.

In Union district, Harrison County, the Reserve Gas Co. completed a test on the I. N. Burnside farm. It is a light pumper in the Speechley sand. This well was formerly a gasser in the Fifth sand. In Mannington district, Marion County, the Philadelphia Gas Co. has a duster on the Lucas Brothers farm.

Wetzel County

In Church district, Wetzel County, Null & Moorhead have a rig up on the Charles Snodgrass farm. On the waters of Leading Creek, Sheridan district, Calhoun County, the Hope Construction & Refining Co. has the rig completed on the E. E. Wilson farm.

On Dry Ridge, Grant district, Ritchie County, the Astron Oil Co. completed in the Big Injun sand No. 14 on the Herman Strusburg Realty Co.'s property showing for a very light pumper. On Buck Run of Sandy Creek, Ravenwood distict, Jackson County, the South Penn Oil Co.'s No. 12 on the C. S. McCarty farm has started to drill.

On Middle Fork of Reedy Creek, Reedy district, Roane County, A. Lester & Co. have a duster on the O'Hara estate, in the Berea grit. In Tanners Run, DeKalb district, Gilmer County, the Ellis Oil & Gas Co. has started to drill No. 6 on the M. R. Ellis farm to the lower sands. It is dry in the Big Injun sand.

In Geary district, Roane County, G. L. Cabot, Inc., completed in the Big Injun sand No. 4 on the John Smith farm. It is a 4-bbl. pumper. On Reedy Creek, Reedy district, the Hope Construction & Refining Co. has the rig completed for No. 5 on the W. H. Enoch farm.

Fair Well in Clay County

In Henry district, Clay County, the Virginian Gasoline & Oil Co. completed in the Big Injun sand No. 22 on the Brown-Swan-Goshorn & Geary tract. It is 500 feet east of No. 21 and good for 25 bbls. a day. In Grant district, Ritchie County, W. H. Bickel has completed his test on the G. C. Jones farm. It is a small gas well.

In Grant district, Wetzel County, the

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WESTERN KENTUCKY AREA ACTIVE; CALHOUN FIELD HAS GOOD SHOWING

By Whit
Staff Correspondent, Kentucky-Tennessee

OWENSBORO, Ky., May 5.—Activity prevails in the Owensboro-Hartford-Calhoun-Niagara-Pellville areas of western Kentucky at this time and over 40 new wells are reported completed from the entire State since the last review. The Calhoun Field of McLean County is making a better showing than at any time since the county broke into the limelight. The Niagara Field of Henderson County is showing renewed activity and while the wells are not as prolific as some of those found in Ohio and Daviess Counties, they average up well for shallow production.

Down in the Greenville Field of Muhlenberg County, the Drake farm well, a mile south of Greenville, drilled by the Benedum-Trees Co., in January, that came in reported good for 5,000,000 feet of gas at 863 feet, is said to show indications of oil and will be given a shot in hopes of bringing it into a commercial oil well.

The important find of the field since the last review is the bringing in of a test on the David Brooks farm, in the extreme northern part of Ohio County, with an initial of 150 bbls. or better, which makes this pool look almost as interesting as some of the other pools in the county, especially the Ambrose, Bartlett, Barnett Church and Buford Pools, but at a much shallower depth. This test was drilled by the Cumberland Petroleum Co., and the farm upon which it is located is just a short distance to the north of the hamlet of Haynesville. The sand was topped at 307 feet and was drilled 26 feet in to a total depth of 333 feet. The well is southeast of the old Pellville Pool and north of the Friendship Church Pool. The David Brooks farm contains 95 acres. Many wells will be drilled during the next few months in the vicinity. There are close to a dozen drilling outfits now at work around Haynesville and more are moving in. Wade and Moore are drilling No. 1 on the Lonie Marlow farm, just a short distance south from Haynesville, also a test on the Weatherford farm, near Magan. The Louisville Gas & Electric Co. has several wells on the R. A. Miller 175 acres that adjoin the Brooks farm, but none was as productive as the Brooks well.

Ohio County Wells

In the Barnett Church Pool, in western Ohio County, the Rex-Pyramid Oil Co.'s No. 13 C. W. Morgan is reported a dry hole, which is not out of the ordinary as dry holes are being found close to good producers in all of the stray sand pools in this county.

C. M. Root keeps the drill going on the Nancy Wiggington farm, in the Buford Pool, formerly called the Jooly Pool. His Nos. 9, 10 and 11 on this lease are reported initially at 50, 80 and 10 bbls. respectively, while on the Vincent J. Steel farm, known as the Chicken farm, same pool, Nos. 7, 8 and 9 produced 15, 15 and 20 bbls. initial, while No. 12 on the Nancy Wiggington was dry.

The Kemrow-Cumberland Petroleum Co.'s No. 4, on the S. L. Lloyd 70 acres, in the Buford Pool, is reported at 30 bbls., and Nos. 5, 6 and 7, same lease, produced 30, 35 and 40 bbls. respectively.

Hupp, Duff and others' No. 8 J. A.

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Cut in Winkler County's Allowance

Proration Extended for Another Six Months. Yates Potential Shows Small Gain. Increase in Penn Pool, Ector County

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., May 5.—A cut in the allowance of Winkler County production to 80,000 bbls. per day, a gradual daily average increase in the Penn Pool, Ector County, with another small well in Irion County on production, and a big checkerboard purchase by the Continental Oil Co. were the main features for West Texas during the week.

The Continental Oil Co. purchased a total of approximately 145,000 acres from Kloh-Rumsey and Morgan through Northrup and Carr of San Angelo, the acreage checkerboarded throughout Culberson, Reeves, Loving, Midland, Ector and Reagan Counties, 90 per cent of the acreage lying in Reeves, Loving and Culberson. This is one of the largest spreads ever purchased in West Texas, and the largest checkerboard play made for a long time. It gives the company ample protection in the aforementioned counties, which can practically be forgotten so far as any more leasing is concerned.

The Winkler County proration advisory committee met with members of the Railroad Commission on May 3 at Fort Worth, and proration was extended for another six months in the Hendricks Pool. The advisory committee recommended that the allowance of the pool be cut to 80,000 bbls. daily, which recommendation met with no objection, and the Railroad Commission later approved this decrease after taking the matter under advisement. Some of the wells which are real small, and barely paying their pumping expenses will not be cut under this new allotment plan.

L. E. Barrows, chairman of the advisory committee, said that out of 646 wells drilled in Winkler County, 557 are still producing. Twenty-seven of this amount have never shown any water, and 34 are now producing pipe line oil. One-hundred and forty-eight are flowing under choke, 269 are pumping wells, 117 have less than 100 pounds back pressure, and 113 have 100 pounds or more. Two hundred and three wells have less than 50 per cent water. The pool is now producing around 79,100 bbls. per day. May 5 the old proration period expired, and the new proration period went into effect.

Yates Proration

In calculating new proration allowances for the Yates Pool, Pecos County, the pool showed a small gain from April 15 to May 1, over the previous 15-day period from April 1 to 15. The last potential showed 2,694,474 bbls. on a 12-hour gauge from 268 wells whereas the previous potential showed 2,692,549 bbls. on the same length of gauging.

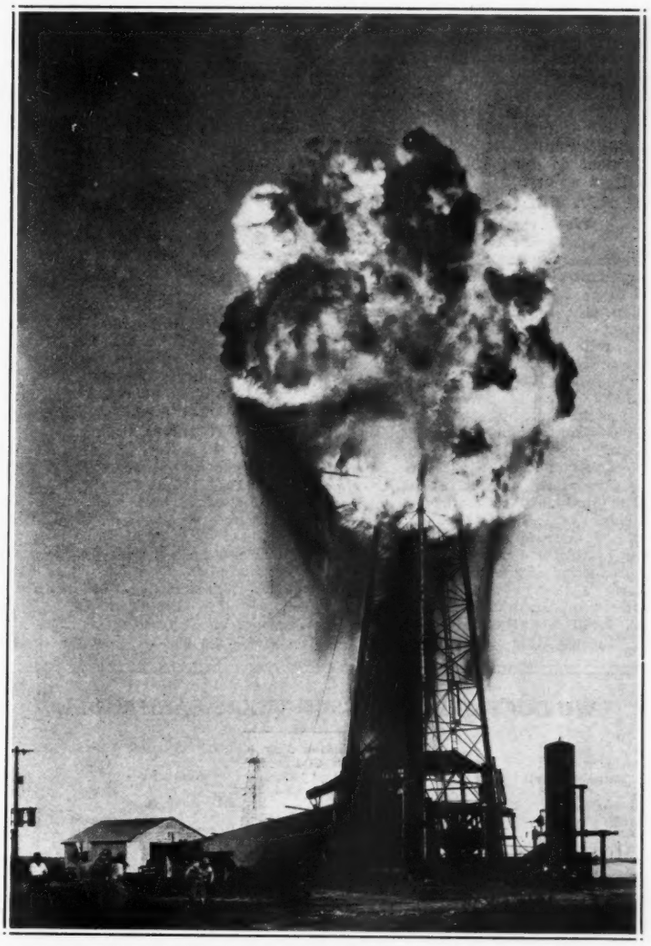
On May 1 the Howard-Glasscock County Pools showed a daily potential of 65,741 bbls. from 167 wells, according to the proration umpire's reports, whereas on April 1 the pools showed only 58,527 bbls. The pipe line companies have elected to take 26,000 bbls. daily from these pools for the month of May.

Stocks in West Texas

It may be interesting to note that the present stocks in West Texas run as follows:

County—	Present stocks (bbls.)
Crane	7,266,929
Crockett	8,091
Ector	57,183
Howard	1,317,437
Lea County, New Mexico	188,719
Midland	9,761,895
Mitchell	445,866
Pecos	939,626
Reeves	12,568
Reagan	2,239,360
Upton	2,416,100
Val Verde	1,600,000
Ward	3,523,380
Winkler	8,655,104
Total	38,432,258

This amount shows a drop of 470,563 bbls., signifying daily average withdrawals amounting to approximately 15,600 bbls. for the month of April. During the week of April 16 to 23 a daily average of 50,259 bbls. was withdrawn from storage in this district, and with the allowance of Winkler County kept at a minimum, with the Yates Pool held down to 110,000 bbls. per day, and the Penn Pool in Ector County not rapidly piling up much in storage, it looks as if withdrawals would continue at the present rate for at least a few more weeks, and that May would register a higher daily average amount of withdrawals than April.



The above picture was taken at the same moment the well caught fire. The well is owned by the Skelly Oil Co. and Amerada Petroleum Corp. It is No. 1 University-A, NE cor., Section 1, Block 35, Ector County, West Texas. The well made 800 bbls. of oil and 1,500,000 feet of gas. It burned 24 hours.

Nothing outstanding happened in the Penn Pool, Ector County, this week and but five wells were completed. There is a total of 21 wells now producing in the pool, 8 of which are actually completed while 13 others are drilling deeper or preparing to shoot. There are 21 drilling wells, 7 wells rigging up, 3 more locations, making a total of 52 operations in the field. Outside of the pool, there are five wildcat operations. Total daily production reached 14,000 bbls. this week.

A second hearing on application of the Texas & Pacific Railroad to drill on its right of way through the Penn Pool, was held at the Texas Hotel in Fort Worth during the week. The meeting adjourned with the boundaries still unsettled, and the boundary disputes will have to be determined in the courts.

Texas first gave the United States Government a 400-foot strip as a right of way which interest was later acquired by the Texas & Pacific Railroad. It is said that the railroad has paid taxes on only a 200-foot strip, leaving a balance of the right of way in dispute. Later the State set aside 60 feet as a highway right of way, and the highway was built on part of the railroad right of way, and there are claimants to mineral lease rights on this highway.

The oil companies with leases running up to and adjoining the right of way do not know how to space their wells because of the uncertainty of the property lines, and the Railroad Commission is therefore holding these hearings in order to try to thresh out the controversy.

The Tidal Oil Co., Llano Oil Co., Sunray Oil Co., California Co. and Independent Oil & Gas Co. are the main companies interested in the hearings, for they all hold adjoining lands to the right of way.

WEST TEXAS PRODUCTION
Week Ending May 5

County—	No. wells	Prod.
Andrews	1	165
Crane	342	35,056
Crockett	46	1,609
Ector	18	9,376
Fisher	7	850
Garza	5	50
Glasscock and Howard	508	39,989
Jones	73	1,299
Loving	21	1,217
Mitchell	145	2,317
Pecos	447	120,126
Reagan	259	17,357
Runnels	3	16
Scurry	5	15
Upton	250	8,812
Ward	24	1,494
Winkler	602	79,191
Total production this week	2,756	318,939
Total production last week	2,755	315,605
Difference	1	3,334

Irion County Producer

Carl G. Cromwell's No. 2 Nutt, 504 feet from the north and 1,162 feet from the west lines of Subdivision 6, Gonzales County School Lands, Irion County, topped the pay from 1,451-60 feet, and is estimated good for about 100 bbls. per day. Cromwell is building a short 2-inch line from the well to Brown and Fox' line which runs from their producer on the Tankersley farm to the north of the Cromwell well, to a loading rack on the Orient, about 2 miles to the west. Oil from the Cromwell discovery will be loaded out from this loading rack.

P. H. Williams' No. 1 Ash, the deepest cable tool test in West Texas, in Section 20, Washington County School Lands, is now shut down at 8,890 feet after striking salt water at 8,885 feet. This test was drilled by Mr. Williams without any company help, and it was the hope of the owner to pick up the deep pay horizon found in the Big Lake Pool in Reagan County, but if that formation was drilled into it was unproductive. This is also the deepest cable tool test in the world. Mr. Williams is

(Continued on Page 98)

WILDCAT OPERATIONS IN WEST TEXAS

Week Ended May 5

Company, farm and location—	Remarks—
ANDREWS COUNTY	
Deep Rock Oil Co. et al's No. 1 Mathis, 900 ft. from S and W, Sec. 4, Blk. A-46, Public School Land	Top salt 1,730 ft.; drlg. 3,165 ft.
Deep Rock Oil Co.'s No. 1 Miles, 990 ft. S. 1,650 ft. E of NW cor., Sec. 22, Blk. A-46, School Land	Drlg. 3,400 ft.; 2,000,000 ft. gas at 2,913-16 ft.
Fuhrman Pet. Corp.'s No. 1 Ford, 440 ft. from S and 2,200 ft. from W of Sec. 16, Blk. A-43, Public School Land	Drlg. 1,505 ft.
Deep Rock Oil Co. et al's No. 1 King, 330 ft. from N and 2,310 ft. from E. Sec. 11, School Blk. A-46	Top salt 1,697 ft.; drlg. 3,800 ft.
R. R. Penn's No. 1 Wilson, C, Sec. 20, Blk. A-37, School Blk.	Drlg. 625 ft.
BORDEN COUNTY	
Phillips et al's No. 1 Goode, 330 ft. N and E of SW cor. SE of Sec. 46, Blk. 33, Twp. 4n, T.&P.R.R. Sur.	Drlg. 3,800 ft.

(Continued on Page 154)

Gray County Has Several Good Wells

Gain There and in Wheeler County Swells Panhandle Total. Young County and Cisco Area Show Much Activity

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., May 5.—Gray County registered a big jump in daily average production this week because of the completion of several good wells. Last week's daily average showed 63,175 bbls. whereas this week's daily average climbed to 70,825 bbls., a gain of over 7,000 bbls. Wheeler County also registered a good gain for that county, production jumping to 887 bbls. this week, a gain of 327 bbls. per day. These two counties made an increase of 7,904 bbls. per day for the Panhandle district, a total daily average of 103,379 bbls.

The Dana Oil & Gas Co.'s No. 1 Feltz, in the C NE, Section 81, Block 44, H.& T.C. Survey, Hartley County, a rank wildcat, encountered a gas bearing formation at 3,515 feet in lime with an increase in gas at 3,565-3,665 feet, and when the well was drilling at the latter depth there was an estimated 12,000,000 feet of gas coming up the hole.

The nearest production is many miles to the east in Moore County which has a daily average production of around 460 bbls., and with the showing of gas made in this well it should stimulate leasing and drilling activities on the western side of Moore County and throughout the whole county of Hartley, especially in the surrounding area near this discovery.

The test will be closely watched for further developments and oil shows, and other tests will no doubt be located to seek the gas bearing formation found in this test, and also in an endeavor to pick up an oil bearing stratum.

Young County Busy

Locations have been made at an exceedingly rapid rate, and drilling operations in Young County are at a maximum since the discovery of Nash and Windfohr's No. 1 McCloud in the Graham Pool, three weeks ago. This well, which was quite phenomenal, and the largest ever completed in the county for an initial production of 1,000 bbls. per hour, is now making 240 bbls. of oil and 141 bbls. of water, against 135 pounds back pressure.

The Shaw-Kisinger, Olney and Graham Pools are the most active areas in the county, and a total of 12 producers was completed this week, the majority located in these pools. Twelve others were marked dry and abandoned.

The Texas Company sold its Clifford lease of 160 acres in Callahan County and its Moran, Webb, Wild, Tarrant-Cloud, Waters and Osborne leases, Shackelford County, consisting of approximately 593 acres to the St. Marys Oil & Gas Co. of St. Marys, W. Va. The Shackelford County leases include the old famous Tarrant-Cloud No. 1 producer. Production runs around 35 bbls. daily from the many shallow wells producing from the 600 and 2,100-foot sands, and the St. Marys company will repressure the leases. This company has some leases and production in Callahan, but the majority of its holdings is in West Virginia.

The Humble Oil & Refining Co. is moving its Putnam pumping station, which has a capacity of 30,000 bbls. per day, to Hobbs, N. Mex., to use on its Hobbs-Winkler County, Texas, 8-inch line which is almost finished, and which will carry crude from the Hobbs Field to Ingleside, by way of Winkler County and McCamey, Tex.

The George Pool, Brown County, produced 531 bbls. from 50 wells on April 30, 1930.

Cisco Activities

The Anna Belle Oil Co.'s No. 1 Paschall, on the northern edge of the town of Cisco in Eastland County, was completed for an initial production of 1,808,000 feet of gas which was found in the Lake sand at 3,449-54 feet. Total depth of the well is 3,604 feet. A rock pressure of 1,150 pounds is maintained with this flow of gas.

This well brings production to the doors of Cisco and other tests may extend production all around the town. There is a small producer on the east side of the town which has been producing for several years, and another gasser was completed two weeks ago only a mile east of the town, consequently the land around Cisco looks quite favorable for gas or oil production.

Brown County was rather exceptional this week due to the fact that there was not a completion reported. As a general rule several small wells are put on production, or other shallow tests are abandoned as dry.

WICHITA FALLS COMPLETIONS

Week ending May 5

Archer County

Heydrick-Camp Drilling Co.'s No. 3 Wilson encountered oil sand at 1,709 feet; total depth 1,711 feet where initial production was 135 bbls. Van-Alexander Syndicate's No. 1 White was found dry and abandoned at 1,650 feet. Bridwell and Continental Oil Co.'s No. 6 Logan got saturated lime at 1,123 feet; total depth 1,139 feet where initial production was 22 bbls. L. T. Burns' No. 3 Fails encountered an oil sand at 1,363 feet; total depth 1,378 feet; initial production 260 bbls. L. T. Burns' No. 5 Fails encountered oil sand at 1,374 feet, total depth 1,389 feet; initial production 245 bbls. L. T. Burns' No. 6 Fails encountered oil sand at 1,376 feet, total depth 1,391 feet where it made an initial production of 283 bbls.

Burns & Long's No. 1 Symank encountered oil sand at 1,422 feet, total depth 1,440 feet; initial production 60 bbls. Burns & Long's No. 2 Symank got oil sand at 1,420 feet, total depth 1,433 feet; initial production 40 bbls. Key & Leath's No. 2 Logan got saturated lime at 1,165 feet, total depth 1,243 feet, plugged back to 1,180 feet where initial production was 5 bbls. J. H. Massie's No. 7 Richardson encountered oil sand at 1,371 feet, total depth 1,380 feet; initial production 100 bbls. Vigil Oil & Gas Co.'s No. 4 Harmil encountered oil sand at 1,434 feet and shot with 100 quarts; total depth 1,457 feet; initial production 90 bbls.

Baylor County

Consolidated Oil Co. and others' No. 16 Portwood encountered oil sand at 1,377 feet, total depth 1,405 feet; initial production 300 bbls. Norwood and others' No. 1 Boone was dry and abandoned, total depth 1,725 feet. Ridgeway and others' No. 1 Galzki was dry and abandoned, total depth 1,802 feet.

Cook County

Danciger Oil & Refining Co.'s No. 1 Gibson was dry and abandoned, total depth 1,502 feet. Sun Oil Co.'s No. 2 Mount was dry and abandoned, total depth 759 feet.

Jack County

Brazos River Oil & Gas Co.'s No. 1-B Keyser was drilled to a total depth of 3,307 feet, plugged back to 3,000 feet and shot with 40 quarts from 2,966-82 feet. The initial production was 60 bbls.

Wilbarger County

Empire Gas & Fuel Co.'s No. 30 Waggoner encountered oil sand at 2,292 feet; total depth 2,336 feet where an initial production of 40 bbls. was made. Empire Gas & Fuel Co.'s No. 19 Waggoner encountered oil sand at 1,875 feet, total depth 1,894 feet; initial production 50 bbls. Hiland Oil Co.'s No. 1 Castleberry was dry and abandoned, total depth 1,540 feet. Phillips Petroleum Co.'s No. 4 Waggoner encountered oil sand at 2,282 feet and again at 2,374 feet; total depth 2,365 feet where it made an initial production of 46 bbls. Phillips Petroleum Co.'s No. 3 Waggoner encountered oil sand at 2,300 feet, shot with 30 quarts and completed at total depth of 2,317 feet with initial production of 45 bbls.

Wichita County

Staniforth and others' No. 4 Crudup got oil sand at 1,805 feet and made initial production of 55 bbls. at total depth of 1,813 feet. Arkansas Fuel Oil Co.'s No. 42 Kemp & Kempner reached oil sand at 1,196 feet, total depth 1,213 feet where it made an initial production of 12 bbls. G. H. Howell's No. 3 Allen-Foster was dry and abandoned at total depth of 820 feet. The Texas Company's No. 377 Waggoner was dry and abandoned at total depth of 2,251 feet. The Texas Company's No. 378 Waggoner encountered oil sand at 1,523 feet, total depth 1,527 feet; initial production 60 bbls.

NORTH TEXAS PRODUCTION

Week Ending May 5

Panhandle district—	Prod.
Carson County	9,094
Hutchinson County	22,110
Gray County	70,825
Moore County	463
Potter County	0
Wheeler County	887
Total production this week	103,379
Total production last week	95,475
Increase	7,904
Wichita Falls district—	
Archer County	18,209
Baylor County	1,352
Clay County	738
Cooke County	3,996
Foard County	242
Jack County	4,025
Haskell County	55
Montague County	6,557
Throckmorton County	1,147
Wilbarger County	24,782
Young County	19,149
Wichita County	25,291
Total production this week	105,543
Total production last week	107,184
Decrease	1,641
Ranger district—	
Brown County	6,805
Callahan County	3,418
Coleman County	4,850
Comanche County	400
Palo Pinto County	632
Eastland County	4,871
Shackelford County	6,137
Stephens County	5,918
Total production this week	33,031
Total production last week	33,340
Decrease	309
Grand total production this week	241,953
Grand total production last week	235,999
Increase	5,954

Young County

Long and others' No. 1 State Lands hit top of pay at 2,467 feet; total depth 2,512 feet where it made an initial production of 380 bbls. R. D. Garrett's No. 1 Hargroves was dry and abandoned at total depth of 610 feet. Hunter Oil Corp.'s No. 1 Benson encountered oil sand at 1,043 feet; initial production 184 bbls. from total depth of 1,078 feet. Hunter Oil Corp.'s No. 1 Calvin encountered oil sand at 1,042 feet, total depth 1,076 feet where an initial production of 35 bbls. was made. Kliner and others' No. 1 Remington was dry and abandoned at total depth of 855 feet. Moore & Blean's No. 1 Ellis was dry and abandoned at total depth of 1,095 feet. Moore and others' No. 1 Wear was dry and abandoned at total depth of 1,096 feet. Panhandle Refining Co.'s No. 1 Keith was dry and abandoned at total depth of 761 feet. Panhandle Refining and others' No. 1 Lowe had oil show at 640 feet, total depth 649 feet; initial production 42 bbls. Perkins & Cullum's No. 6 Dunagan, oil show 1,043 feet and 1,062 feet; total depth 1,078 feet; initial production 175 bbls. Perkins and others'

(Continued on Page 98)

WILDCAT OPERATIONS IN TEXAS PANHANDLE

Week Ending May 5
CARSON COUNTY

Company, well, farm, name, section and block—	Remarks—
Danciger O. & R. Co.'s No. 1 Block, 330 ft. N and E lines, Sec. 112, Blk. 4, I.&G.N. Sur.	S.D. 2,985 ft.
Danciger O. & R. Co.'s No. 1 Byrum, 990 ft. N, 330 ft. W, SW, Sec. 188, Blk. 3, H.&G.N. Sur.	Location.
Delmar Oil Co.'s No. 5 Noel, 330 ft. S and W, NE cor. W½ SE, Sec. 198, Blk. 3, I.&G.N. Sur.	S.G. 3,000-10 ft.; S.D. 3,131 ft.
Cockrell-McIlroy Oil Co.'s No. 1 Eller, 330 ft. S and W, NE cor. NW, Sec. 200, Blk. 3, I.&G.N. Sur.	T.D. 3,206 ft; run. 6-in. csg.
Cockrell-McIlroy Oil Co.'s No. 1 Simms, 330 ft. S and E, E 140 ac., N 160 ac., S 320 ac., Sec. 11, Blk. 7, I.&G.N. Sur.	Drlg. 2,925 ft.
Empire G. & F. Co.'s No. 1 Archer-B, 330 ft. N and E, SW cor. SW, Sec. 139, Blk. 3, I.&G.N.R.R. Sur.	Location.
Empire G. & F. Co.'s No. 2 Fields, 990 ft. N and W Sec. 13, Blk. 4, I.&G.N. Sur.	Set 15-in. csg. 590 ft.
H.A.M. Oil Co.'s No. 1 Cooper, 330 ft. S and W, E½ NE, Sec. 5, Blk. 9, H.&G.N.R.R. Sur.	T.D. 3,105 ft.; 2,000 ft. oil in hole.
Humble O. & R. Co.'s No. 2 Combs-Worley, 330 ft. S, 240 ft. E, NW cor. N½ SE, Sec. 36, Blk. 3, I.&G.N. R.R. Sur.	Location.
McClintock et al's No. 2 Garner, 330 ft. W and S of E 55 ac. of N 80 ac., NW, Sec. 105, Blk. 4, I.&G.N. R.R. Sur.	Drlg. 2,075 ft.
Phillips Pet. Co.'s No. 1-A Garner, 430 ft. S line, 330 ft. W, Sec. 114, Blk. 4, I.&G.N. Sur.	Drlg. 3,077 ft.
Phillips Pet. Co.'s No. 1 Pickens, 990 ft. E line, 230 ft. N line, NE cor., Sec. 31, Blk. 7, I.&G.N.R.R. Sur.	Drlg. 825 ft.
Prairie O. & G. Co.'s No. 2 Nail, 330 ft. N and W lines, N½ E½ SE, Sec. 198, Blk. 3, I.&G.N. Sur.	10,000,000 ft. gas 2,830-2,985 ft.; S.D. 3,123 ft.
Shamrock O. & G. Co.'s No. 1 Thompson, 330 ft. S and W lines, E 80 ac., NE, Sec. 5, Blk. 7, I.&G.N. Sur.	Set 8-in. csg; T.D. 2,430 ft.
Shell Pet. Corp.'s No. 1 Percival, 330 ft. N and E, SE, Sec. 199, Blk. 3, I.&G.N. Sur.	S.D. 600 ft.
Skelly Oil Co.'s No. 19 Schafer, 330 ft. N, 990 ft. E, SW cor. NE, Sec. 198, Blk. 3, I.&G.N. Sur.	6,000,000 ft. gas 2,895-2,970 ft.; S.D. 3,100 ft. by agreement.
Suloch Oil Co.'s No. 1 Bost, 990 ft. S. 330 ft. E. SW, Sec. 1, Blk. S&F.	Drlg. 680 ft.
Sweeney et al's No. 1 Locke, 164 ft. N and W, 40-ac. tr. along R.R. in Sec. 57, Blk. 7, I.&N.G. Sur.	Location.
Texas Interstate P. L. Co.'s No. 1 Burnett, 1,320 ft. N, 660 ft. W, of W 480 ac., Sec. 99, Blk. 5, I.&G.N. Sur.	Drlg. 975 ft.
Texas Interstate P. L. Co.'s No. 1 Sanford, C NW NE, Sec. 4, Blk. 3, A.B.&M. Sur.	Drlg. 1,510 ft.
L. W. Timm's No. 2 Garnet (White Deer), 330 ft. S and W, NE cor., Sec. 104, Blk. 4, I.&G.N.R.R. Sur.	Fishing 3,082 ft.

(Continued on Page 155)

The Guiberson Disc Bit

The Guiberson Disc Bit in this picture was used by the Hammond Drilling Company, at Maud, Oklahoma.

The Guiberson Disc Bit is a consistent holder of speed records everywhere it is used, its four discs cutting a swift passage through soft or semi-hard formations, and also penetrating rock shells, obviating the necessity of pull-outs to change bits. The Guiberson Disc Bit also assures a straight hole, casing having been run in after it as far as 2,500 feet without encountering the slightest tight place or shell. Reamers keep the hole full size. Water flush holes extend to bottom of bit, keeping surfaces clean for cutters. If you are interested in speed and efficiency, and, above all, a straight hole, the quickest way you'll get them will be with the Guiberson Disc Bit. Fully Patented.

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GUIBERSON
BETTER BE SAFE THAN SORRY

Bureau of Mines Statistics, Month of March

Prepared under the supervision of G. R. Hopkins, Petroleum Economics Division, E. B. Swanson, acting chief economist, Petroleum Economics Division.

Crude Petroleum

According to reports received by the Bureau of Mines, Department of Commerce, the production of crude petroleum in the United States during March, 1930, amounted to 77,384,000 bbls., a daily average of 2,496,000 bbls. This represents a decline from the daily average of the previous month of 162,000 bbls., and was the first time since July, 1928, that the daily output has fallen below the 2,500,000-bbl. mark.

Daily average crude production in all three of the leading producing states—Texas, California and Oklahoma—declined in March. The decrease in the California fields was outstanding; the Long Beach Field, for example, declined in daily output to below the 100,000-bbl. mark for the first time since October, 1927. Both the Seminole and West Texas districts declined in daily average output and the active Oklahoma City Field fell from a daily average of 78,000 bbls. in February to 72,000 bbls. in March.

The decline in crude production and the increase in runs to stills of domestic crude were reflected in crude stocks which, east of California, decreased 1,299,000 bbls. during the month. Light crude stocks in California increased nearly 500,000 bbls., but this was somewhat offset by a decrease in heavy crude and fuel stocks. The net decrease in total crude stocks was 1,155,000 bbls. which, combined with an increase in stocks of refined products and natural gasoline of 2,360,000 bbls. makes a total increase in all stocks of 1,205,000 bbls. This compares with an increase in February of 5,847,000 bbls. and an increase in March, 1929, of 9,454,000 bbls.

Refined Products

Runs to stills of crude petroleum amounted to 80,252,000 bbls., a daily average of 2,589,000 bbls., as compared with a daily average of 2,586,000 bbls. in February and with 2,603,000 bbls. in March, 1929.

Motor fuel production average 1,217,000 bbls. daily, a slight increase over the previous month. Exports of gasoline amounted to 6,057,000 bbls., the highest monthly total ever recorded. Stocks of motor fuel rose to 55,239,000 bbls., a new high level, and an increase over the previous month of 2,010,000 bbls. The daily indicated domestic demand for motor fuel amounted to 1,001,000 bbls., an increase over February of 6 per cent, and over March, 1929, of 11 per cent. At the current rate of total demand, the March stocks of 55,239,000 bbls. represent 46 days' supply as compared with 48 days' supply on hand a month ago and 46 days' supply on hand a year ago.

The refinery data of this report were compiled from schedules of 345 refineries, with an aggregate daily recorded crude-oil capacity of 3,655,300 bbls., covering as far as the bureau is able to determine, all operations during March, 1930. These refineries operated at 71 per cent of their recorded capacity, given above, as compared with 342 refineries, operating at 71 per cent of their capacity in February.

SUPPLY AND DEMAND OF ALL OILS

(Including wax, coke and asphalt in thousands of barrels of 42 U. S. gallons)

	Mar., 1930	Feb., 1930	Mar., 1929	Jan.-Mar., 1930	Jan.-Mar., 1929
NEW SUPPLY:					
Domestic production:					
Crude petroleum	77,384	74,427	82,515	231,264	240,187
Daily average	2,496	2,658	2,662	2,570	2,669
Natural gasoline	4,576	4,248	4,324	13,234	12,043
Benzol	262	229	264	731	747
Total production	82,222	78,904	87,103	245,229	252,977
Daily average	2,652	2,818	2,810	2,725	2,811
Imports:					
Crude petroleum	4,827	4,321	6,790	14,598	21,881
Refined products	3,713	3,224	1,489	10,743	3,281
Total new supply, all oils	90,762	86,449	95,382	270,570	278,139
Daily average	2,928	3,087	3,077	3,006	3,090
Increase in stocks, all oils	1,205	5,847	9,454	12,076	30,918
DEMAND:					
Total demand	89,557	80,602	85,928	258,494	247,221
Daily average	2,889	2,879	2,772	2,872	2,747
Exports:					
Crude petroleum	1,944	1,731	1,572	5,483	5,222
Refined products	12,496	10,075	10,801	34,539	32,021
Domestic demand	75,117	68,786	73,555	218,472	209,978
Daily average	2,423	2,457	2,373	2,427	2,333
Excess of daily average domestic production over domestic demand	229	361	437	298	478
STOCKS (end of month):					
Crude petroleum:					
East of California†	380,007	381,306	379,659	380,007	379,659
California‡	152,124	151,980	126,422	152,124	126,422
Total crude	532,131	533,286	506,081	532,131	506,081
Natural gasoline at plants	673	572	995	673	995
Refined products	161,716	159,457	138,305	161,716	138,305
Grand total stocks, all oils	694,520	693,315	645,381	694,520	645,381
Days' supply	240	241	233	242	235
Bunker oil (included above in domestic demand)	4,077	4,058	4,213	12,358	12,380

*Revised. †Excludes producers' stocks. ‡Includes residual fuel oil and producers' stocks.

INDICATED DOMESTIC DEMAND FOR CRUDE PETROLEUM EAST OF CALIFORNIA

(Thousands of barrels of 42 U. S. gallons)

Domestic petroleum by fields of origin:	Mar., 1930 Total	Mar., 1930 D'ly av.	Feb., 1930 Total	Feb., 1930 D'ly av.	Jan.-Mar., 1930	Jan.-Mar., 1929
Appalachian:						
Pennsylvania grade	1,973	64	1,896	68	5,972	
Other (including Kentucky)	727	23	684	24	2,346	7,590
Lima, northeast Indiana, Michigan	461	15	429	15	1,296	937
Illinois-Southwest Indiana	545	18	718	26	2,059	1,825
Mid-Continent:						
North Louisiana and Arkansas	3,207	103	3,119	111	9,405	11,109
West Texas, southeast New Mexico	10,705	345	10,295	368	31,759	
Other (Oklahoma, Kansas, North Texas, etc.)	33,650	1,086	28,619	1,022	94,195	124,870
Gulf Coast:						
Grade A	2,708	87	2,325	83	7,900	
Grade B	3,545	114	2,728	97	9,846	11,624
Rocky Mountain	1,855	60	1,806	65	5,763	6,675
California	....	..	1	..	4	....
Total demand	59,376	1,915	52,620	1,879	170,545	164,630
Exports	1,071	34	1,071	38	3,198	3,313
Domestic demand	58,305	1,881	51,549	1,841	167,347	161,317
Foreign petroleum	4,434	143	3,762	134	14,132	21,848
Total domestic demand east of Calif.	62,739	2,024	55,311	1,975	181,479	183,165

COMPARATIVE ANALYSES

(Thousands of barrels of 42 U. S. gallons)

	Mar., 1930 Total	Mar., 1930 D'ly av.	Feb., 1930 Total	Feb., 1930 D'ly av.	Jan.-Mar., 1930	Jan.-Mar., 1929
CRUDE PETROLEUM:						
Runs to stills:						
Domestic	75,662	2,441	67,923	2,426	218,635	212,445
Foreign	4,590	148	4,491	160	14,194	19,119
Total	80,252	2,589	72,414	2,586	232,829	231,564
Imports	4,827	156	4,321	154	14,598	21,881
Exports	1,944	63	1,731	62	5,483	5,222
GASOLINE:						
Production*	37,727	1,217	33,949	1,212	108,330	101,109
Imports	1,369	44	953	34	3,401	1,232
Exports	6,057	195	4,840	173	16,355	13,286
Stocks†	55,239	....	53,229	....	55,239	48,224
Domestic demand	31,029	1,001	26,509	947	83,269	73,923
KEROSENE:						
Production	4,752	153	4,398	157	13,639	13,659
Imports	1	....	5	....	15	62
Exports	1,745	56	1,204	43	4,918	5,408
Stocks	8,455	....	8,565	....	8,455	7,855
Domestic demand	3,118	101	3,205	114	9,320	9,451
GAS OIL AND DISTILLATE FUELS:						
Production	6,231	201	5,957	213	18,895	....
Stocks	13,184	....	13,239	....	13,184	....
RESIDUAL FUEL OILS:						
Production	25,880	835	25,228	901	77,614	....
Stocks‡	19,814	....	21,041	....	19,814	....
GAS OIL AND FUEL OIL:						
Production	32,111	1,036	31,185	1,114	96,509	105,623
Imports	2,254	73	2,257	81	7,163	1,947
Exports	3,613	117	2,835	101	9,743	9,094
Stocks	32,998	....	34,280	....	32,998	30,195
LUBRICANTS:						
Production	3,120	101	2,727	97	8,727	8,391
Imports	3	....	1	....	7	7
Exports	729	24	870	31	2,507	3,032
Stocks	9,561	....	§9,289	....	9,561	8,853
Domestic demand	2,122	68	§1,525	§54	4,935	4,853
WAX (thousands of pounds):						
Production	61,320	1,978	50,960	1,820	164,640	165,284
Imports	2,080	67	2,151	77	6,451	8,677
Exports	20,076	648	18,761	670	71,163	75,551
Stocks	232,241	....	213,487	....	232,241	158,404
Domestic demand	24,570	793	27,112	968	59,096	59,350
COKE (short tons):						
Production	160,600	5,181	139,600	4,986	445,700	394,000
Stocks	785,600	....	755,500	....	785,600	402,400
ASPHALT (short tons):						
Production	210,200	6,781	181,300	6,475	582,600	624,100
Stocks	287,500	....	261,000	....	287,500	250,100
ROAD OIL:						
Production	315	10	320	11	953	....
Stocks	380	....	344	....	380	....
MISCELLANEOUS:						
Production	363	12	433	15	1,399	2,016
Stocks	510	....	552	....	510	691

*Includes benzol production and natural gasoline used elsewhere than at refineries east of California. †Includes motor fuel blends held at natural gasoline plants. ‡East of California. §Revised.

PRODUCTION OF CRUDE PETROLEUM BY STATES WITH CLASSIFICATION BY GRAVITY

(Thousands of barrels of 42 U. S. gallons)

	Mar., 1930 Total	Mar., 1930 D'ly av.	Feb., 1930 Total	Feb., 1930 D'ly av.	Jan.-Mar., 1930	Jan.-Mar., 1929
Arkansas	1,755	57	1,657	59	5,047	6,819
California:						
Long Beach	3,082	99	3,187	114	9,567	16,614
Santa Fe Springs	4,650	150	5,018	179	14,970	15,335
Rest of State	11,968	386	12,681	453	38,032	38,063
Total California	19,700	635	20,886	746	62,569	70,012
Colorado	139	5	146	5	423	604
Illinois	575	19	486	17	1,548	1,561
Indiana:						
Southwestern	77	2	80	3	231	240
Northeastern	4	..	4	..	11	14
Total Indiana	81	2	84	3	242	254
Kansas	3,458	111	3,102	111	9,715	8,851
Kentucky	620	20	601	21	1,880	1,656
Louisiana:						
Gulf Coast	583	19	595	21	1,715	1,848
Rest of State	1,249	40	1,146	41	3,537	3,108
Total Louisiana	1,832	59	1,741	62	5,252	4,956
Michigan	359	11	351	13	1,107	424
Montana	219	7	214	8	659	863
New Mexico	303	10	304	11	915	224
New York	371	12	329	12	1,015	762
Ohio:						
Central and eastern	438	14	426	15	1,313	1,240
Northwestern	110	4	113	4	324	321
Total Ohio	548	18	539	19	1,637	1,561
Oklahoma:						
Osage County	....	..	1,029	37	....	3,958
Oklahoma City	2,231	72	2,184	78	6,948	400
Seminole	7,850	253	7,384	264	24,365	36,600
Rest of State	....	....	7,077	252	....	23,117
Total Oklahoma	18,814	607	17,674	631	56,609	64,087
Pennsylvania	1,217	39	1,127	40	3,506	2,572
Tennessee	....	..	1	..	3	3
Texas:						
Gulf Coast	5,408	175	4,912	176	15,429	10,585
West Texas	10,341	333	9,622	344	30,297	34,346
Rest of State	9,601	310	8,775	313	27,580	24,161
Total Texas	25,350	818	23,309	833	73,306	69,102
West Virginia	451	15	445	16	1,360	1,335
Wyoming:						
Salt Creek	950	30	871	31	2,667	2,776
Rest of State	642	21	560	20	1,804	1,754
Total Wyoming	1,502	51	1,431	51	4,471	4,530
Total United States	77,384	2,496	74,427	2,658	231,264	240,187

NUMBER OF WELLS COMPLETED ALL FIELDS*

	Mar., 1930	Feb., 1930	Jan.-Mar., 1930	Jan.-Mar., 1929
Oil	1,090	969	3,119	3,282
Gas	180	170	573	576
Dry	585	413	1,520	1,712
Total	1,855	1,552	5,212	5,570

*From The Oil and Gas Journal and California office of American Petroleum Institute.

(Continued on Next Page)

STOCKS OF CRUDE PETROLEUM

(Thousands of barrels of 42 U. S. gallons)

EAST OF CALIFORNIA:	Mar. 31 1930	Feb. 28, 1930	Mar. 31 1929
At refineries by location:			
East Coast: Domestic	8,876	8,406	9,050
Foreign*:	5,064	4,539	6,439
Appalachian	3,001	2,928	2,496
Indiana, Illinois, Kentucky, Michigan, etc.	3,333	3,277	2,930
Oklahoma, Kansas and Missouri	5,281	5,446	5,920
Texas: Inland	2,105	1,850	1,952
Gulf Coast: Domestic	9,992	10,669	8,417
Foreign*	271	299	625
Arkansas and inland Louisiana	994	969	1,310
Louisiana Gulf Coast: Domestic	4,146	4,228	2,986
Foreign	1,216	1,320	2,316
Rocky Mountain	1,646	1,647	2,103
Total	45,925	45,578	46,549
At refineries by origin:			
Pennsylvania grade	2,842	2,695	(†)
Other Appalachian (including Kentucky)	939	916	(†)
Lima, Northeast Indiana, Michigan	161	138	(†)
Illinois-Southwest Indiana	155	159	(†)
North Louisiana and Arkansas	4,711	4,732	(†)
West Texas and southeast New Mexico	4,569	4,646	(†)
Oklahoma, Kansas, North Texas, etc.	16,899	17,183	(†)
Gulf Coast: Grade A	4,592	4,220	(†)
Grade B	2,821	3,043	(†)
Rocky Mountain	1,644	1,647	2,108
California	41	41	(†)
Foreign*	6,551	6,158	9,380
Total	45,925	45,578	46,549
Elsewhere than at refineries by origin:			
Pennsylvania grade	4,974	4,811	
Other Appalachian (including Kentucky)	975	911	5,493
Lima, Northeast Indiana, Michigan	791	802	994
Illinois-Southwest Indiana	10,196	10,085	11,343
North Louisiana and Arkansas	21,199	21,381	25,212
West Texas and southeast New Mexico	52,919	52,940	246,104
Oklahoma, Kansas, North Texas, etc.	198,761	200,254	
Gulf Coast: Grade A	8,754	8,871	
Grade B	10,915	11,210	19,091
Rocky Mountain	24,598	24,463	24,873
Total	334,082	335,728	333,110
Total east of California	380,007	381,306	379,659
CLASSIFICATION BY GRAVITY (approximately):			
East of California: Light	340,142	339,871	329,634
Heavy	39,865	41,435	50,025
California: Light	44,710	44,241	25,167
Heavy (including fuel)	107,414	107,739	101,255
PRODUCERS' STOCKS (not included above; approximately):			
East of California: Seminole	506	490	548
Other	5,644	5,560	5,952
Total	6,150	6,050	6,500

*Includes importers' stocks. †Not available.

RUNS TO STILLS AND OUTPUT OF REFINERIES, MARCH, 1930

(Thousands of barrels of 42 U. S. gallons)

Input—	Crude oil: Domestic	Crude oil: Foreign	Crude oil: Total	Unfinished oils rerun	Natural gasoline	Total input
East Coast	9,804	4,249	14,053	1,317	191	15,561
Appalachian	2,778	.....	2,778	214	35	3,027
Ind., Ill., Ky., etc.	10,131	.....	10,131	735	206	11,072
Okla., Kans., Mo.	9,851	.....	9,851	332	455	10,638
Texas	18,876	83	18,959	813	932	20,704
Louisiana and Arkansas	5,077	258	5,335	904	413	6,652
Rocky Mountain	1,802	.....	1,802	479	142	2,423
California	17,343	.....	17,343	*540	†1,279	19,162
U. S. Total	75,662	4,590	80,252	5,334	3,653	89,239
Texas Gulf Coast	13,800	83	13,883	662	710	15,255
Louisiana Gulf Coast	3,091	258	3,349	625	275	4,249

	Gas oil and fuel oils: Gasoline	Kerosene	Gas oil and distillate fuels	Residual fuel oils	Total	Lubricants	Wax (thousands of lbs.)‡
East Coast	5,194	689	1,381	5,205	6,586	922	22,960
Appalachian	1,322	342	75	348	423	447	12,880
Ind., Ill., Ky., etc.	6,022	513	788	1,839	2,627	363	6,160
Okla., Kans., Mo.	5,343	779	128	2,425	2,553	264	3,080
Texas	8,540	1,291	1,221	5,922	7,143	769	6,160
Louisiana and Ark.	2,635	430	843	1,602	2,445	67	7,280
Rocky Mountain	1,233	83	66	384	450	53	2,800
California	6,901	625	1,729	8,155	9,884	235	.....
U. S. Total	37,190	4,752	6,231	25,880	32,111	3,120	61,320
Texas Gulf Coast	6,290	1,011	860	3,814	4,674	724	5,880
La. Gulf Coast	1,814	358	658	797	1,455	49	7,280

	Coke‡ (tons)	Asphalt‡ (tons)	Other finished products: Road oil	Miscellaneous	Total	Unfinished products	Shortage
East Coast	11,000	86,000	12	36	48	855	656
Appalachian	3,900	1,800	3	28	31	230	156
Ind., Ill., Ky., etc.	46,100	45,800	79	25	104	897	27
Okla., Kans., Mo.	29,600	1,700	19	51	70	1,046	412
Texas	38,000	12,400	1	35	36	1,639	1,002
Louisiana and Ark.	14,700	23,800	71	103	174	447	222
Rocky Mountain	12,200	.....	15	9	24	477	31
California	5,100	38,700	115	76	191	674	413
U. S. Total	160,600	210,200	315	363	678	6,265	2,929
Texas Gulf Coast	30,600	12,400	1	20	21	1,535	755
La. Gulf Coast	14,300	19,100	71	95	166	117	86

*Includes 14,000 bbls. net tops rerun. †Includes 255,000 bbls. run through pipe lines. ‡Wax, coke, and asphalt equivalent to 280 pounds per barrel and 5.1 and 5.5 barrels per ton, respectively.

SHIPMENTS FROM CALIFORNIA TO EASTERN PORTS IN UNITED STATES*

(Thousands of barrels of 42 U. S. gallons)

	Mar., 1930	Feb., 1930	Jan.-Mar., 1930	Jan.-Mar., 1929
Crude oil	....	....	....	396
Refined products	1,439	2,186	5,660	6,338
Gasoline	1,073	1,585	4,327	5,108
Tops	....	....	....	....
Kerosene	....	49	99	....
Gas oil	243	451	1,014	1,157
Diesel oil	79	65	144	....
Fuel oil	5	4	10	59
Lubricants	30	29	59	5
Asphalt	2	3	7	9

*Compiled by E. T. Knudsen of the San Francisco office of the Bureau of Mines.

IMPORTS AND EXPORTS OF CRUDE PETROLEUM AND MAJOR REFINED PRODUCTS*

(Thousands of barrels of 42 U. S. gallons)

	Mar., 1930: Total	Mar., 1930: D'ly av.	Feb., 1930: Total	Feb., 1930: D'ly av.	Jan.-Mar., 1930	Jan.-Mar., 1929
CRUDE PETROLEUM:						
Imports	4,827	156	4,321	154	14,598	21,881
From Mexico	489	16	418	15	1,342	1,899
From Venezuela	2,897	93	2,706	97	9,209	15,336
From Colombia	1,380	45	937	33	3,498	3,538
From other countries	61	2	260	9	549	1,108
Exports:						
Domestic crude oil	1,944	63	1,731	62	5,483	5,222
To Canada	1,379	45	1,438	52	4,106	4,110
To other countries	565	18	293	10	1,377	1,112
Shipments	...	..	...	..	....	....
Foreign crude oil	...	..	...	..	....	....
REFINED PRODUCTS:						
Gasoline:						
Imports	1,369	44	953	34	3,401	1,232
Exports	6,057	195	4,840	173	16,355	13,286
To United Kingdom	1,726	56	1,431	51	4,813	3,991
To France	1,055	34	773	28	2,706	2,122
To Canada	212	7	168	6	552	749
To other countries	2,828	91	2,463	88	7,881	6,050
Shipments	236	7	5	..	403	374
Kerosene:						
Exports	1,745	56	1,204	43	4,918	5,408
To China	179	6	124	4	541	918
To United Kingdom	249	8	161	6	746	1,017
To other countries	1,302	42	915	33	3,579	3,415
Shipments	15	..	6	..	52	58
Gas oil and fuel oil:						
Imports	2,254	73	2,257	81	7,162	1,947
Exports	3,613	117	2,835	101	9,743	9,094
To Chile	560	18	182	6	1,192	1,264
To Panama	88	3	529	19	704	431
To other countries	2,432	79	1,788	64	6,704	6,599
Shipments	533	17	336	12	1,143	800
Lubricants:						
Exports	729	24	870	31	2,507	3,032
To United Kingdom	153	5	166	6	583	462
To France	76	3	126	5	346	454
To other countries	489	16	572	20	1,554	2,096
Shipments	11	..	6	..	24	20
Wax (thousands of pounds):						
Imports	2,080	67	2,151	77	6,451	8,677
Exports	20,076	648	18,761	670	71,163	75,551
To United Kingdom	4,596	148	1,174	42	14,422	19,486
To Italy	2,581	84	3,047	109	12,626	42,342
To other countries	12,898	416	14,538	519	44,111	13,703
Shipments	1	...	2	...	4	20

*From Bureau of Foreign and Domestic Commerce.

STOCKS HELD BY REFINING COMPANIES, MARCH 31, 1930

(Thousands of barrels of 42 U. S. gallons)

	Gasoline	Kerosene	Gas oil and fuel oil: Gas oil and distillate fuels	Gas oil and fuel oil: Residual fuel oils	Total
East Coast	9,132	1,515	2,132	3,832	5,964
Appalachian	2,125	278	636	359	995
Indiana, Illinois, Kentucky, etc.	8,832	760	726	2,306	3,032
Oklahoma, Kansas, Missouri	5,124	838	1,798	2,277	4,075
Texas	8,208	1,416	2,301	8,601	10,902
Louisiana and Arkansas	2,661	623	615	1,606	2,221
Rocky Mountain	3,168	352	252	833	1,085
California	15,978	2,673	4,724	..	4,724
Total	55,228	8,455	13,184	19,814	32,998
Texas Gulf Coast	6,719	1,290	2,071	5,804	7,875
Louisiana Gulf Coast	2,307	543	508	866	1,374

	Lubricants	Wax (thousands of pounds): Crude scale	Wax (thousands of pounds): Refined	Wax (thousands of pounds): Total	Coke (tons)
East Coast	3,314	77,050	20,632	97,682	25,900
Appalachian	1,320	20,254	3,714	23,968	6,600
Indiana, Illinois, Kentucky, etc.	777	18,282	2,373	20,655	40,900
Oklahoma, Kansas, Missouri	513	4,459	3,019	7,478	61,600
Texas	2,188	1,736	9,093	10,829	342,100
Louisiana and Arkansas	145	49,442	2,670	52,112	69,400
Rocky Mountain	159	17,755	1,762	19,517	113,900
California	1,145	.....	.....	.....	125,200
Total	9,561	188,978	43,263	232,241	785,600
Texas Gulf Coast	2,102	1,429	9,093	10,522	328,600
Louisiana Gulf Coast	137	49,442	2,670	52,112	69,300

	Asphalt (tons)	Other finished products: Road oil	Other finished products: Miscellaneous	Other finished products: Total	Unfinished oils: Natural gasoline	Unfinished oils: Other	Unfinished oils: Total
East Coast	118,800	19	41	60	83	8,026	8,109
Appalachian	5,000	10	64	74	11	1,614	1,625
Indiana, Illinois, Kentucky, etc.	76,700	73	118	191	31	4,885	4,916
Oklahoma, Kansas, Missouri	2,800	3	36	39	48	2,749	2,797
Texas	9,000	4	38	42	186	14,834	15,020
Louisiana and Arkansas	22,900	82	14	96	27	3,516	3,543
Rocky Mountain	5,200	74	62	136	4	1,771	1,775
California	47,100	115	137	252	1,849	*8,533	10,382
Total	287,500	380	510	890	2,239	45,928	48,167
Texas Gulf Coast	9,000	4	28	32	161	12,961	13,122
Louisiana Gulf Coast	17,500	82	6	88	10	2,847	2,857

*Includes 2,772,000 bbls. tops.

PRODUCTION OF MOTOR FUEL

(Thousands of barrels of 42 U. S. gallons)

Gasoline produced at refineries:	March, 1930: Total	March, 1930: Dly. av.	February, 1930: Total	February, 1930: Dly. av.	Jan. Mar., 1930	Jan.-Mar., 1929
Straightrun	20,043	647	18,025	643	57,433	58,633
Cracked	13,494	435	11,952	427	38,456	31,439
Natural gasoline:						
Blended at refineries	3,398	110	3,380	121	10,302	9,671
Run through pipe lines*	225	8	143	5	632	323
Total	37,190	1,200	33,500	1,196	106,823	100,066
Other natural gasoline:						
Blended at plants†	25	1	20	1	76	145
Sold direct to jobbers†	250	8	200	7	700	150
Benzol produced‡	262	8	229	8	731	748
Total motor fuel	37,727	1,217	33,949	1,212	108,330	101,109

*To refineries in California. †East of California. ‡Estimated with production of by-product coke as a basis.

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PRODUCTION OF CRUDE PETROLEUM BY FIELDS
(Thousands of barrels of 42 U. S. gallons)

FIELD:	Mar., 1930 Total	Mar., 1930 D'ly av.	Feb., 1930 Total	Feb., 1930 D'ly av.	Jan.-Mar., 1930	Jan.-Mar., 1929
Appalachian:						
Pennsylvania grade	2,283	74	2,136	76	6,610	5,346
Other (including Kentucky)	814	26	793	28	2,467	2,222
Lima, Northeast Indiana, Michigan	473	15	468	17	1,442	768
Illinois-Southwest Indiana	652	21	566	20	1,779	1,801
Mid-Continent:						
North Louisiana and Arkansas	3,004	97	2,803	100	8,584	9,918
West Texas-Southeast New Mexico	10,607	342	9,879	353	31,075	34,459
Other (Oklahoma, Kansas, North Texas, etc.)	31,873	1,028	29,551	1,055	93,904	97,099
Gulf Coast:						
Grade A	2,963	96	2,715	97	8,088	5,661
Grade B	3,028	98	2,792	100	9,056	6,782
Rocky Mountain	1,987	64	1,838	66	5,690	6,118
California	19,700	635	20,886	746	62,569	70,012
Total	77,384	2,496	74,427	2,658	231,264	240,187
CLASSIFICATION BY GRAVITY (approximately):						
Light crude	68,035	2,195	65,407	2,336	203,783	216,268
Heavy crude	9,349	301	9,020	322	27,481	23,919

GASOLINE PRODUCTION BY THE VARIOUS METHODS, MARCH, 1930
(Thousands of barrels of 42 U. S. gallons)

	Straightrun Total	Straightrun %	Cracked Total	Cracked %	Natural-gasoline Total	Natural-gasoline %	Grand total
East Coast	2,476	48	2,527	49	191	3	5,194
Appalachian	817	62	470	35	35	3	1,322
Ind., Ill., Ky., etc.	3,278	55	2,538	42	206	3	6,022
Okla., Kans., Mo.	3,953	57	1,835	34	455	9	5,343
Texas	4,112	48	3,496	41	932	11	8,540
Louisiana and Arkansas	1,180	45	1,042	39	413	16	2,635
Rocky Mountain	551	45	540	44	142	11	1,233
California	4,576	66	1,046	15	*1,279	19	6,901
Total	20,043	54	13,494	36	3,653	10	37,190
Texas Gulf Coast	2,805	45	2,775	44	710	11	6,290
Louisiana Gulf Coast	852	47	687	38	275	15	1,814

*Includes 255,000 bbls. run through pipe lines.

RECORD OF WELLS FOR VARIOUS IMPORTANT FLUSH FIELDS, MARCH, 1930*

	Completions Oil	Completions Gas	Completions Dry	Total initial production (bbls.)	Average initial production (bbls.)	Drilling Mar. 31
Seminole, St. Louis, etc.	62	5	17	62,200	1,000	196
West Texas	45	0	31	16,600	400	216
Long Beach	19	0	3	8,100	400	67
Santa Fe Springs	34	0	3	15,300	500	54

*From The Oil and Gas Journal and California office of American Petroleum Institute.

PRODUCTION AND DISTRIBUTION OF NATURAL GASOLINE
(Thousands of barrels of 42 U. S. gallons)

	March, 1930 Total	March, 1930 Dly. av.	February, 1930 Total	February, 1930 Dly. av.	Jan.-Mar., 1930 Total	Jan.-Mar., 1930 Dly. av.
Production	4,576	148	4,248	152	13,234	147
Decrease in all stocks	....	....	....	....	....	....
Total	4,576	148	4,248	152	13,234	147
Blended at refineries	3,398	110	3,380	121	10,302	114
Run through pipe lines in Cali	255	8	143	5	632	7
Blended at plants*	25	1	20	1	76	1
Sold direct to jobbers*	250	8	200	7	700	8
Increase in all stocks	179	6	210	7	621	7
Balance	469	15	295	11	903	10
Total	4,576	148	4,248	152	13,234	147

*East of California.

PANHANDLE FIELDS

(Continued from Page 94)

No. 1 Morris, oil show 1,039 feet, total depth 1,076 feet; initial production 210 bbls. E. R. Riggs' No. 2 Larimore, oil show 686 feet, total depth 697 feet; initial production 105 bbls. River & Omohundro's No. 3 Keith, oil show 665 feet, total depth 671 feet; initial production 13 bbls. Marion Smith's No. 1 Hill was dry and abandoned at 1,330 feet. Smith-Archer Drilling Co.'s No. 1 Watson was dry and abandoned at 778 feet. Union Oil Co. and others' No. 1 Keathley was dry and abandoned at 1,060 feet. Williams and others' No. 5 Taack had oil show at 675 feet, total depth 678 feet; initial production 10 bbls. Wo-Mac Oil Co.'s No. 8 Stephens-Roack, oil show 727 feet, total depth 734 feet; initial production 40 bbls.

RANGER COMPLETIONS

Week Ending May 5

Brown County

Phillips Petroleum Co.'s No. 1 Mauldin encountered gas sand at 1,115 feet, total depth 1,124 feet, initial production 575,000 feet. Phillips Petroleum Co.'s No. 1-C Williams was drilled to a total depth of 1,109 feet, had gas sand at 1,094 feet, initial production 625,000 feet. Buecher and others' No. 1 Black was dry and abandoned at total depth of 850 feet. Coombs, Rodgers and others' No. 2 Barnes was completed at total depth of 1,149 feet, initial production 1,500,000 feet. Crosscut Corp.'s No. 1 Nunn was dry and abandoned at total depth of 1,531 feet.

Coleman County

Conners and others' No. 1 Roberts was dry and abandoned at total depth of 802 feet. Gibson & Johnson's No. 1 Barton was dry and abandoned at total depth of 2,232 feet. Smith and others' No. 2 Switzer was drilled to total depth of 1,490 feet, plugged back to 1,462 feet, and had an initial production of 150,000 feet of gas from 1,429-44 feet.

Callahan County

Campbell Oil Corp.'s No. 1 Jackson was dry and abandoned at total depth of 2,644 feet. Colgin & Johnson's No. 1 Cutbirth was dry and abandoned at total depth of 770 feet.

Comanche County

Central Texas Natural's No. 1 Reed was shot from 2,640-59 feet with 50 quarts, and made an initial production of 1,000,000 feet from a total depth of 2,661 feet. Hopkins and others' No. 1 Copers was drilled to total depth of 3,352 feet, plugged back to 2,738 feet and shot with 80 quarts from 2,706-38 feet. Universal Oil Co.'s No. 1 Underwood was drilled to total depth of 2,833 feet, had three shots; 10 quarts from 2,635-45 feet; 80 quarts from 2,648-2,717 feet; and 140 quarts from 2,620-50 feet; initial production 8 bbls.

Eastland County

Anna Belle Oil Co.'s No. 1 Paschall encountered Lake sand at 3,449-54 feet, was drilled to total depth of 3,604 feet, initial production of 1,808,000 feet with 1,150 pounds rock pressure. Lone Star Gas Co.'s No. 5 Grove encountered Lake sand at 3,557 feet, total depth 3,572 feet, initial production of 20,000,000 feet.

Palo Pinto County

Burton McKee Oil Corp.'s No. 8 Strawn Coal Co. was drilled to 2,995 feet total depth, encountered gas sand at 2,988 feet, and made an initial production of 750,000 feet of gas with 1,300 pounds rock pressure.

Stephens County

Lone Star Gas Co.'s No. 1 Abrams was dry and abandoned at total depth of 3,940 feet. Lone Star Gas Co.'s No. 1 Elliott encountered gas sand at 2,082 feet and 2,096 feet, drilled to total depth of 2,102 feet, initial production of 3,000,000 feet.

Erath County

Texas Pacific Coal & Oil Co.'s No. 1 Allen was dry and abandoned at total depth of 4,030 feet.

TEXAS PANHANDLE COMPLETIONS

Week Ending May 5

Carson County

Empire Gas & Fuel Co.'s No. 1 Bennett, gas sand 2,550-2,690 feet, total depth 2,853 feet, initial production 11,000,000 feet.

Gray County

Camel Oil Co.'s No. 2-B Hanoh, top of pay 3,170 feet; total depth 3,205 feet; initial production 150 bbls. Constantine and others' No. 1 Crews, dry and abandoned at total depth of 2,850 feet. Danciger Oil & Refining Co.'s No. 1 Williams, top of pay 2,680 feet, total depth 2,692 feet, initial production 450 bbls. Magnolia Petroleum Co.'s No. 4 Faulkner, top of pay 2,793 feet, shot with 350 quarts from 2,793-2,880 feet; initial production 10 bbls.; total depth 2,905 feet. Same company's No. 6 Wright, top of pay 2,855 feet; initial production 1,050 bbls., total depth 2,680 feet. Same company's No. 7 Wright, top of pay 2,850 feet, initial production 1,640 bbls., total depth 2,862 feet.

Operators Refining Co.'s No. 1 Eddington, top of pay 2,937 feet, initial production 25 bbls., total depth 3,025 feet. Panhandle Refining Co.'s No. 4 Saunders, shot with 90 quarts from 2,497-5,557 feet, top of pay 2,490 feet; increase at 2,543 feet. Well had 10,000,000 feet of gas at 2,205-30 feet; initial production 650 bbls., total depth 2,557 feet. Reiger & Stekol's No. 1 Bohr, dry and abandoned at 3,509 feet. The Texas Company's No. 15 Saunders, gas sands 2,255-60 feet, 2,475-80 feet, and 2,515-25 feet; plugged back to 2,595 feet; initial production 8,000,000 feet; total depth 2,930 feet.

Hutchinson County

Dixon Creek Oil Co.'s No. 1 (7) Cheathorn, top of pay 3,064 feet, plugged back to 3,074 feet, initial production 820 bbls., water at 1,270 feet; total depth 3,064 feet.

Wheeler County

Lone Star Gas Co.'s No. 1-A Wofford, gas 1,760-1,971 feet, initial production 3,500,000 feet, total depth 1,971 feet. Murchison & Fain's No. 1 Purcell, gas sand 1,647-1,757 feet, initial production 47,000,000 feet; total depth 1,800 feet.

WEST TEXAS FIELDS

(Continued from Page 93)

an old oil operator, having worked several place in this country and Mexico, and drilled a south extension to the Powell or World Field in Crockett County in 1928.

Shooting in Ector County

An example of how shooting some of the wells in the Penn Pool, Ector County, has helped them to increase in production was readily made this week when the Shell Petroleum Corp. shot its No. 1 Jones with 120 quarts from 3,567-3,705 feet. It was flowing around 500 bbls. daily before the shot, and after the shot it flowed 954 bbls. the first 20 hours, flowing open. This test was a slight northern extension to the pool last week, and is in Section 6, Block 44. It topped the pay at 3,615-20 feet and was shut down at 3,760 feet. An increase in oil was struck at 3,885 feet.

Drilling in the Independent Oil & Gas Co. and Tidal Oil Co.'s No. 1 Eidson in Section 6, north of the Shell well, is progressing rather slowly as is also the Texas Pacific Coal & Oil Co.'s test in Section 28 to the northwest, as they are both drilling in extremely hard formations. The former well was down to 3,580 feet today and should encounter the pay within a few more days if no hard luck occurs. This test will mean a considerable extension to the pool, and if the Texas Pacific well proves a producer it will open up quite an amount of proven acreage.

The Pecos Valley Pool registered another gasser this week when Buell & Hagan and Independent Oil & Gas Co.'s No. 1 Pecos Valley was shut in at a total depth of 1,585 feet making an estimated 25,000,000 feet.

Steele Pool

Midwest Exploration Co.'s No. 1 Steele in Section 210, Block 1, B.B.B.&C. Survey, a slight eastern extension to the Steele Pool in Fisher County in December, 1929, which was connected with a pipe line by the Humble Oil & Refining Co. last week, was drilled 6 feet deeper during the week, to a total depth of 3,205 feet, and swabbed at the rate of 30 bbls. per hour for the first three hours. Production of the well is estimated good for 500 bbls. It is now being tested.

A. H. Gibson's No. 1 Cody, west offset to the Adams-Ferguson-Hobb's No. 1 Lowe producer in the Guadalupe County School Lands, Taylor County, is shut down at 2,396 feet to run a liner. It is estimated good for only 20 bbls. per day. The oil sand was picked up at 2,370-77 feet, and lime with oil was found at 2,390-92 feet.

The Scurry County Test of Byrd & Harmon in Section 114, Block 97, H.& T.C. Survey, which looked good for a 10-bbl. well last week after it topped a pay formation at 1,700 feet with an increase in oil from 1,722 to 1,832 feet, is now fishing at 2,442 feet, with no further increases.

A gas test made on some wells in the Penn Pool, Ector County, by the Phillips Petroleum Co. show the wells producing from 550,000 feet to over 1,315,000 feet per day with the gas ranging from 0.43 gallon per 1,000 feet to 1.02 gallons per 1,000 feet, and it is reported the Phillips Co. has purchased a casinghead gasoline plant site, and will erect such a plant immediately.

WEST TEXAS COMPLETIONS

Week ending May 3

Culberson County

Grisham & Hunter's No. 1 Seay was dry and abandoned at total depth of 3,509 feet.

Ector County

Cosden Oil Co.'s No. 1 Kloh & Rumsey encountered top of pay at 3,652 feet, total depth 3,722 feet after having been shot from 3,652-3,722 feet with 100 quarts; initial production 1,052 bbls. Humble Oil & Refining Co. and others' No. 4-D Kloh & Rumsey hit top of pay at 3,615 feet, shot from 3,620-3,710 feet with 270 quarts, total depth 3,710 feet; initial production 612 bbls. Same company's No. 6-D Kloh & Rumsey encountered top of pay at 3,658 feet, total depth 3,759 feet, plugged back to 3,734 feet and shot, making an initial production of 1,024 bbls. after shot. Simms Oil Co.'s No. 1 University encountered top of pay at 3,620 feet, total depth 3,670 feet where an initial production of 770 bbls. was made. Skelly Oil Co. and others' No. 1-A University hit top of pay at 3,625 feet, total depth 3,722 feet, shot from 3,624-3,718 feet with 360 quarts and made an initial production of 620 bbls. Gulf Production Co.'s No. 1-A University topped pay at 3,670 feet, total depth 3,735 feet; plugged back to 3,705 feet; initial production 292 bbls.

Glasscock County

Group No. 1 and Continental's No. 1 Miller was dry and abandoned at total depth of 2,486 feet.

Howard County

Continental Oil Co.'s No. 4-E Clay had show of oil from 1,424-29 feet, and at 1,535 feet, top of pay encountered at 1,740-50 feet where well was shot with 10 quarts; initial production 40 bbls. from total depth of 1,757 feet.

Mitchell County

Magnolia Petroleum Co.'s No. 7 M. Foster encountered top of pay at 2,751 feet, total depth 2,810 feet where an initial production of 105 bbls. was made.

Tom Green County

Cosden Oil Co.'s No. 1 Johnson was dry and abandoned at total depth of 553 feet. Ellis and others' No. 2 Lewis was dry and abandoned at total depth of 456 feet.

Concho County

Watchorn Oil & Gas Co.'s No. 1 Noyes was dry and abandoned at total depth of 1,760 feet.

Crane County

Humble Oil & Refining Co.'s No. 2-C University encountered top of pay at 2,

872 feet, shot from 2,875-2,935 feet with 170 quarts; total depth 2,935 feet where it made 85 bbls. the first 12 hours.

Menard County

Cromwell & Duffey's No. 2 Winslow was dry and abandoned at total depth of 3,535 feet. The Ellenberger was topped at 3,455 feet.

Pecos County

M. M. Rowan's No. 1 University was drilled to total depth of 2,044 feet, plugged back to 1,815 feet; top of pay at 1,794 feet; initial production 6 bbls. oil and 200 bbls. of sulphur water. Southern Crude Oil Purchasing Co.'s No. 5-A Tippett encountered top of pay at 365 feet, total depth 402 feet; initial production 409 bbls. in 16 hours.

Griffith's No. 1 Ferrenbach, dry and abandoned at 3,005 feet total depth (corrected completion).

Institute Directors Commend Estimates Of Economic Report

By A. E. Mockler

New York Bureau, The Oil and Gas Journal

NEW YORK, May 3.—Leading oil executives, meeting here this week for the regular meeting of the board of directors of the American Petroleum Institute and several committee meetings, discussed a number of current problems affecting the industry and adopted measures designed to work out improvement in the market situation.

The principal action of the board of directors was the adoption of a resolution commending the recent report of the Committee on Petroleum Economics appointed by the Federal Oil Conservation Board, on the status of probable petroleum consumption, and urging the careful consideration of this report by the industry in general. The text of the resolution follows:

"Resolved, that the board of directors of the American Petroleum Institute commends the Federal Oil Conservation Board for its constructive action in appointing on March 10, 1930, a Volunteer Committe on Petroleum Economics and in requesting such committee to make an analysis of the status of petroleum demand and to express an opinion on the following points:

"1. What is the anticipated consumption of refined products?

"2. What production of crude is necessary to meet efficiently that demand?

"3. Can this supply be allocated to the major producing districts separately, and

"Resolved, that the board compliments said committee upon the admirable report which it filed with the Federal Oil Conservation Board on March 25, 1930, and announced by said board on April 14, 1930, with the comment that 'the experts of the Federal Oil Conservation Board inform us that these estimates are amply provided for by present developments,' and

"Be it further resolved, that the board of directors of the Institute commend this report to the petroleum industry with the suggestion that it receive in the several oil producing states the most careful consideration."

Directors in attendance at the meeting were Amos L. Beaty, Transcontinental Oil Co.; E. R. Brown, Magnolia Petroleum Co.; J. S. Carroll, Johns-Manville, Inc.; W. N. Davis, Phillips Petroleum Co.; O. D. Donnell, Ohio Oil Co.; L. J. Drake, Union Tank Car Co.; W. C. Franklin, Tidal Oil Co.; F. B. Fretter, National Refining Co.; John L. Gray, Deep Rock Oil Corp.; W. M. Irish, Atlantic Refining Co.; F. A. Leovy, Gulf Production Co.; Edgar J. Marston, Texas Pacific Coal & Oil Co.; G. R. Nutty, Gulf Refining Co.; J. Howard Pew, Sun Oil Co.; E. B. Reeser, Barnsdall Corp.; E. G. Seubert, Standard Oil Co. of Indiana; C. L. Suhr, Pennzoil Co.; J. C. Van Eck, Shell Union Oil Corp.; H. M. Dawes, Pure Oil Co.; and H. L. Pratt, Standard Oil Co. of New York.

In addition to the directors, the following were present at the board meeting: E. W. Isom, Sinclair Refining Co.; R. J. Berry, Ohio Oil Co.; E. J. Bullock, Standard Oil Co. of Indiana; O. S. Ambrose, Tide Water Associated Oil Co.; E. L. Estabrook, Pan American Petroleum & Transport Co.; F. R. Coates, H. L. Doherty Co. The following members of the Institute staff attended: W. R. Boyd, Jr., executive vice president; R. P. Anderson, secretary, Division of Refining; C. A. Young, secretary, Division of Production; Lacey Walker, secretary; Paul E. Hadlick, secretary, Division of Marketing; Leonard M. Fanning, director, Public Relations Department; and Fayette B. Dow, Washington counsel.

Routine matters were taken up at the meeting of the Central Committee on Unit Operation during the week. There was a large attendance at this meeting, members present including W. N. Davis of the Phillips Petroleum Co., chairman; Col. T. H. Barton, Lion Oil Refining Co.; E. R. Brown, Magnolia Petroleum Co.; F. R. Coates, Henry L. Doherty Co.; Henry M. Dawes, Pure Oil Co.; O. D. Donnell, Ohio Oil Co.; W. S. Farish, Humble Oil & Refining Co.; John L. Gray, Deep Rock Oil Corp.; W. M. Irish, Atlantic Refining Co.; E. J. Marston, Texas Pacific Coal & Oil Co.; E. G. Seubert, Standard Oil Co. of Indiana; W. C. Teagle, Standard Oil Co. of New Jersey; and J. C. Van Eck, Shell Union Oil Co.

Others in attendance at the unit operation committee's meeting included E. J. Bullock, Standard Oil Co. of Indiana; E. L. Estabrook, Pan American Petroleum & Transport Co.; R. J. Berry, Ohio Oil Co.; Harry Weiss, Humble Oil & Refining Co.; E. B. Reeser, Barnsdall Corp.; A. F. Corwin, Standard Oil Co. of New York; J. Howard Pew, Sun Oil Co.; and H. F. Sinclair, Sinclair Consolidated Oil Corp.

Informal discussion among the directors and oil men gathered at Institute headquarters for the meetings disclosed a most optimistic feeling concerning the outlook for the oil business during the summer months. Co-operative restriction measures in crude oil production, it appeared to be felt, are working out satisfactorily, and the adjustment of production of refined products undertaken by some companies through adoption of the Federal Oil Board's suggestion for a curtailment of operations has been instrumental in making for a favorable adjustment of the statistical position, notably on gasoline, with further improvement in sight in this connection.

MAY CRUDE RUNS LESS THAN YEAR AGO

(Continued from Page 60)

REFINERY OPERATIONS IN NORTH LOUISIANA

(Plants which have been in operation during the past year)

	Daily capacity	Runs May 1	Runs Apr. 1
Bayou State Refining Co., Hosston	750	550	600
Crystal Oil Refining Corp., Shreveport	14,000	(*)	(*)
Dixie Oil Co., Superior	3,000	2,700	3,000
Louisiana Oil Refining Co., Shreveport, Bossier	24,000	16,700	17,500
Shreveport, El Dorado Pipe Line Co., Shreveport	10,000	9,000	6,700
The Texas Company, Shreveport	7,000	(*)	3,300
Total	58,700	28,950	31,100

*Shut down.

REFINERY OPERATIONS IN ARKANSAS

(Plants which have been in operation during the past year)

	Daily capacity	Runs May 1	Runs Apr. 1
James H. Berry & Sons Co., Waterloo	2,000	1,000	(*)
Henry H. Cross Co., Smackover	6,000	5,000	5,000
Houston Oil Co., Camden	3,000	3,400	3,500
Kettle Creek Refining Co., Pearson	5,000	2,800	2,800
Lion Oil & Refining Co., El Dorado	12,000	8,000	8,000
Macmillan Petroleum Products Co., El Dorado	1,800	1,600	1,600
Ouachita Valley Refining Co., El Dorado	2,000	1,000	1,000
Root Refining Co., El Dorado	10,000	8,400	8,000
Simms Oil Co., Smackover	3,000	2,500	2,500
Total	44,800	33,700	32,400

*Shut down.

REFINERY OPERATIONS IN NORTH CENTRAL TEXAS

(Plants which have been in operation during the past year)

	Daily capacity	Runs May 1	Runs Apr. 1
American Refining Properties, Wichita Falls	6,000	3,400	2,500
Archer Refining Co., Megargel	2,000	700	700
Central Texas Refining Co., Angus	4,000	1,300	1,200
Central Texas Refining Co., Minerva	2,000	700	600
Continental Oil Co., Wichita Falls	6,000	4,000	4,000
Dale Oil & Refining Co., Electra	4,000	3,000	2,500
Empire Oil & Refining Co., Gainesville	5,000	3,600	3,600
Falls Refining Co., Wichita Falls	2,000	1,000	1,000
Gulf Refining Co., Fort Worth	10,000	6,000	6,000
Humble Oil & Refining Co., Breckenridge	2,000	1,500	1,000
Humble Oil & Refining Co., Chilton	4,000	1,500	2,000
Humble Oil & Refining Co., Neches	5,000	1,800	500
Iowa Park Producing & Refining Co., Iowa Park	2,500	2,000	1,500
LaSalle Petroleum Co., Burkburnett (Noble)	3,500	1,500	1,000
Macmillan Petroleum Co., Isom	8,000	6,000	6,300
Magnolia Petroleum Co., Fort Worth	12,000	5,000	4,600
Magnolia Petroleum Co. (White Eagle plant), Fort Worth	6,000	2,500	2,500
Magnolia Petroleum Co., Corsicana	5,000	4,500	4,500
Olney Oil & Refining Co., Olney	2,000	2,200	2,000
Oriental Oil Co., Dallas	5,000	3,000	3,300
Orient Petroleum Co., Wichita Falls	2,500	2,000	2,000
Panhandle Refining Co., Wichita Falls	5,000	3,700	3,300
Pampa Refining Co., Pampa	4,000	2,500	2,700
Petroleum Refractionating Co., Pampa	5,000	3,300	4,000
Phillips Petroleum Co., Isom	10,000	11,000	9,500
Primrose Refining Co., Wichita Falls	2,500	2,000	2,000
Simms Oil Co., Dallas	5,000	3,100	3,100
Star Refining & Producing Co., Fort Worth	1,800	500	800
Superior Refining Co., Tiffin	2,000	(*)	(*)
Tarrant Refining Co., Grand Prairie	2,500	(*)	(*)
Taxman Refining Co., Wichita Falls	2,500	2,000	2,000
The Texas Company, Dallas	16,000	16,000	16,000
The Texas Company, Amarillo	4,000	3,500	3,000
Tidal Western Refining Co., Burkburnett	3,000	2,000	2,000
Texas Pacific Coal & Oil Co., Fort Worth	3,000	2,000	2,000
Transcontinental Oil Co., Fort Worth	5,000	4,000	4,000
Waggoner Refining Co., Electra	3,400	2,500	2,500
Total	166,700	115,300	110,200

*Shut down.

PIPE COATING TESTS

WASHINGTON, D. C., May 5.—Final announcement was made today that the Bureau of Standards intends to place orders for the necessary pipe, cans, boxes, etc., to be used in conjunction with the nipple tests of protective coatings for pipe lines on Wednesday, May 14. No pipe or other materials can be ordered for coatings offered for test for which the fee of $275 has not been received by the above date. No application for further tests will be received after that date. Checks should be drawn to the order of the American Petroleum Institute for the correct amount in multiples of $275 depending upon the number of coatings offered for the test.

Pennsylvania Grade Oil, Over Produced, Is Cut 25c in Price

The Seep Purchasing Agency on May 1 announced a 25-cent reduction in the price of all Pennsylvania grade oil. This includes practically all the oil produced in New York, Pennsylvania, southeastern Ohio and West Virginia.

The Tide Water Pipe Co. on the same day reduced its price paid for crude in the Allegany and Bradford Fields in New York and McKean County, Pennsylvania, 25 cents, making its new price $2.50 per barrel. Independent refiners in the district also pay $2.50 per barrel.

The Seep Purchasing Agency, which is a part of the South Penn Oil Co., posted its new prices as follows: Pennsylvania grade oil in New York transit lines (New York) 2.50; Pennsylvania grade oil from the Bradford district in National transit lines (Pennsylvania) $2.50; Pennsylvania grade oil outside of Bradford, in National transit lines (Pennsylvania) $2.55; Pennsylvania grade oil in Southwest Pennsylvania lines (West Virginia) $2.50; Pennsylvania grade oil in Eureka Pipe Line lines (Pennsylvania) $2.40; Pennsylvania grade oil in Buckeye Pipe Line lines (Ohio) $2.40. The names of the states in parentheses indicate the source of the oil.

The latest cut in crude in the old Eastern fields simply means that the producers there are bringing more oil to the surface than the market requires. One year ago Bradford and Allegany crude were selling for $4.10 (Seep posting) and $4.35 (Independent refiners' prise) and other Pennsylvania grades were bringing from $3.85 to $4. At that time Pennsylvania grade oil was being taken from storage. At about that time Bradford and Allegany operators were beginning their "five spot" flooding on a large scale which brought up so much oil that the demand was oversupplied and oil was run to storage. This upset the market and it dropped off, beginning in mid-July and continuing to drop at intervals until January of this year, when it was supposed to have reached bottom. A year ago the Pennsylvania grade fields were producing 72,500 bbls. a day and this has been increased steadily until it has reached about 82,000 bbls. a day. The demand for Pennsylvania grade crude has increased in the meantime, but not enough to absorb the supply.

The average daily production of 64,086 bbls. in 1929 was an incease of 6,385 bbls. over the daily output for 1928, and approaches the peak period of production in the history of the Pennsylvania field, which was about 83,000 bbls. daily in 1881. January and February of 1930 came still closer to record figures with daily average productions of 71,000 and 76,000 bbls. respectively. Until a few years ago this oldest oil field was generally considered to be practically played out, but water flooding and other scientific repressuring methods are making it possible to recover vast quantities of oil that could not be brought to the surface by ordinary pumping.

Producers in the Pennsylvania field predict that if the present rate of increased production continues, the daily output within two years will exceed the highest production in the history of the field, providing the market price for oil does not go so low due to overproduction that developments cannot be carried on profitably.

Production in the Pennsylvania crude fields is now close to the highest figures in the history of this section, where oil was first drilled in 1859. According to figures compiled and announced by the Pennsylvania Grade Crude Oil Association from data furnished by the Bureau of Mines for New York, Pennsylvania and West Virginia, and by three major gathering companies for central and eastern Ohio, 23,391,618 bbls. of crude oil were produced in the Pennsylvania grade territory in 1929.

Pipe Line Construction News

GAS LINE TO BALTIMORE IS BEING CONSIDERED

WERNERSVILLE, Pa., May 3.—Universal use of gas for domestic and industrial heating purposes was forecast for the future by F. R. Phillips, president of the Equitable Gas Co. of Pittsburgh, in addressing the convention of the Pennsylvania Gas Association. Closer association of the gas and chemical industries in the manufacture of gas by-products also was predicted.

Mr. Phillips terms gas the "big brother" of electricity in as much as distribution of natural and manufactured gas in 1929 was estimated at 28,000,000,000 therms, equivalent to nine times the total production last year of electrical heat energy.

"The logical place of the manufactured gas company in the future," Mr. Phillips asserted, "is to be a medium through which coal is utilized in the most efficient manner. The gas works will be closely associated with the chemical industry, which will take over its by-products. From these by-products will come alcohols, motor fuels, solvents and a wide range of organic chemicals.

"To this end the gas plant should ultimately process all coal, supplying factories, railroads and utilities with smokeless fuel and distributing energy in the form of gas from strategically located gas wells through high pressure lines over wide areas. Gas will be universally used for domestic and industrial heating, refrigeration and space cooling."

Mr. Phillips predicted that the burning of raw coal in anything except the most modern boilers "will soon be considered a crime against society." He pointed out that "the elimination of the thousands of household heating plants where raw coal is still burned in a most inefficient manner and with considerable smoke is part of the future work of the gas industry."

Recalling the erroneous predictions as late as 1920 of some public utility men in Ohio, West Virginia and western Pennsylvania that natural gas was approaching exhaustion, Mr. Phillips expressed himself as optimistic concerning the supplies. He said "the end of natural gas for Pittsburgh, Cleveland, Cincinnati, Columbus and hundreds of other places in the Appalachian area is not yet in sight."

"Because of large reserves developed in Kentucky," he added, "there is under consideration at the present time the transportation of natural gas to Baltimore and other cities on the Atlantic seaboard."

Emphasizing the size of the industry, Mr. Phillips pointed out that "sales of gas by utilities in 1929 amounted to something like 2,500,000,000,000 cubic feet and that investments in the business exceed $5,000,000,000, of which more than $1,000,000,000 has been added in the past two and one-half years."

MOTORS FOR VAN LINE

The General Electric Co., Schenectady, N. Y., have shipped nine 400 horsepower, 2,200 volts with 3,600 r.p.m. motors to the Pure Oil Co. in East Central Texas to use in its pumping station on its Van-Smiths Bluff 10-inch pipe line which it is now building. These are three-phase cycle motors of the squirrel cage type, driving nine Worthington centrifugal oil pumps having 30,000 bbls. daily capacity, but which can be raised to 42,000 bbls. daily capacity if needed.

Pump stations are now being erected for these motors and pumps, and the switchboards are in process of completion at the General Electric plant at Dallas, Tex.

ONTARIO GAS EXTENSION

CHATHAM, Ontario, May 5.—Union Natural Gas Co. of Chatham is planning to extend its system to serve the communities of Bothwell and Thamesville in Kent County, and Florence in Lambton County. Lines will be laid from Oakdale, in Dawn Township, where some new gas production has been developed, and complete new distribution will be provided for the three communities. The outlay is estimated at $110,000. The project is conditional on the signing of sufficient customers. It is planned to deliver gas this summer.

SOUTHERN NATURAL GAS ANNOUNCES EXTENSIONS

An appropriation of $15,000,000 for extensions to the existing transmission system of the Southern Natural Gas Corp. and associated companies, to be expended as rapidly as possible, and to be fully expended by October, is announced by J. H. White, president of the Southern Natural Gas Corp., the Alabama Natural Gas Corp., the Mississippi Natural Gas Corp., and the Georgia Natural Gas Corp., in the following statement:

Southern Natural Gas Corp., and affiliated companies, Mississippi Natural Gas Corp., Georgia Natural Gas Corp., announce that plans have been completed for the extension of the natural gas pipe line systems and distributing systems in the southeast, involving an expenditure of more than $15,000,000.

The additional communities to be served with natural gas are Meridian, Jackson, Laurel, Hattiesburg, Moss Point and Pascagoula, Miss., Selma, Montgomery, Mobile, Opelika, Auburn and Brick Yard, Ala.; Macon, Griffin and Milledgeville, Ga., and many other towns contiguous to the pipe line system of Southern Natural Gas Corp. The plans involve the construction of nearly 800 miles of additional pipe lines.

"The expenditure of the $15,000,000 will be distributed among the states of Mississippi, Alabama and Georgia about as follows: Mississippi, $7,500,000; Alabama, $4,500,000; Georgia, $3,000,000.

Southern Natural Gas Corp. has contracts with the local gas distribution companies to supply to them all the gas required for both domestic and industrial purposes in Jackson and Hattiesburg, Miss.; Selma, Montgomery and Mobile, Ala.. and Macon and Griffin, Ga.

Southern Natural Gas Corp. has 782 miles of pipe line already constructed, and is supplying through distributing companies natural gas to Vicksburg, Starkville, Pickens, Goodman, Yazoo City, Kosciusko, Louisville and Columbus, Miss.; Tuscaloosa, the Birmingham industrial district, Anniston and Gadsden, Ala.; Rome, Atlanta, East Point and College Park, Ga.; as well as to numerous industries served through distributing companies directly on its pipe line.

The pipe line to Meridian, Miss., is now under construction, as are also distribution plants at Starkville, Miss.; Leeds, Ala.; and Carrollton, Ga.. and the balance of the work for both pipe line and distribution systems is to be started at once, and is scheduled to be completed October 1, 1930.

Upon completion of the projected construction work, Southern Natural Gas Corp. and affiliated companies will have invested in the states of Louisiana, Mississippi, Alabama, and Georgia approximately $40,000,000. This pipe line system will comprise more than 1,700 miles of line, making natural gas available to the territory with a population estimated at 1,300,000 persons."

PIPE ORDER PLACED FOR 725 MILE LINE

By B. E. V. Luty

PITTSBURGH, Pa., May 5.—A big event in the history of tubular goods manufacture in the United States has just occurred, appearance of 24-inch seamless line pipe in commercial quantities, and in very large quantities at the outset. The largest seamless hitherto made has been 13⅜-inch, and that in a relatively small way, being for casing. Thus there is a large jump in diameter and initial orders booked for the new material run into hundreds of miles and into six figures as to the tonnage. The report of five weeks ago referred to completion of the National Tube Co.'s new seamless tube mill at Gary, Ind., to make up to 24-inch, and mentioned samples of the product which the writer had seen, 24-inch, with walls five-sixteenth inch thick.

It is now learned that National Tube Co. has booked an order for 280 miles of 24-inch seamless, about 60,000 tons, from Cities Service Co. Specific information is not given but it is understood the gas line involved will run to some point in Oklahoma. Also the company has booked from the Missouri-Kansas Pipe Line Co. 275 miles of 24-inch, 350 miles of 22-inch and a large mileage in smaller sizes, the total quantity being between 150,000 and 200,000 tons. It is understood the line involved will run to Omaha, serving various intermediate points. This order is to be filled in seamless as far as possible but delivery requirements may be such as to necessitate the substitution of some lapweld. Neither order has any connection with the long proposed Texas to Chicago line, which is still deferred but is fully expected to eventuate.

National Tube Co. has two seamless tube mills, to make up to 24-inch, in process of completion, at Lorain, Ohio, and McKeesport, Pa., near Pittsburgh. It is now, or soon will be, prepared to make large diameter electrically welded line pipe at McKeesport.

The past three years have brought very remarkable developments in tubular goods manufacture, after a long period of very little change. Ordinary welded pipe, using wrought iron, was made in early times. In August, 1887, Bray at Wheeling proved that steel could be used for welded pipe, Bessemer steel being then used, and production grew rapidly, but methods underwent little change, the only distinct innovation being the development early in this century of the hammer welding process, by which later pipe up to 96-inch diameter has been produced. Unlike the ordinary pipe process, which involves heating the entire piece for welding, hammer welded pipe is made by heating only the parts to be welded.

Seamless tubing appeared long ago, but only in very light form at the outset, it having a big vogue in the eighteen nineties in the manufacture of bicycles. Later, seamless largely displaced welded for boiler tubes. Then seamless came to be made in larger diameters for oil wells, both as casing and for rotary drilling, being considered indispensable for the latter purpose.

In September, 1927, the A. O. Smith Corp., Milwaukee, began making large diameter line pipe by an electric welding process and since then has taken a large part of the business going in large diameter line pipe, there being a double advantage over ormdinary lapweld by the process being cheap per foot while higher tensile strength steel could be used for electric welding than for fire welding, so that a lighter pipe would stand the pressure, thus saving in the cost of steel. In recent years another electric welding process has been developed, used for small diameters, and over a year ago Republic Iron & Steel Co., now Republic Steel Corp., acquired the process and is going to make larger diameters, having already got up to 6-inch, in which a long pipe line was furnished last year.

Demand for standard or merchant pipe continues its slow increase, but the volume is quite below that at this time last year. Standard pipe business in the year to date has run about 20 per cent under last year for the same period. There is a fair amount of line pipe, in small orders, and a little oil country goods, whereby the pipe mills are estimated to be running at around 60 per cent. Seamless tube mills are doing something below that.

In the steel trade as a whole there is now a halt in the slow improvement that has been in progress since late March, with a slight downturn in mill operations in some districts. Usually steel production begins to turn downwards by the end of March, to a low July, and it would appear that the same thing has begun now, later than usual, as buyers were particularly reserved in making engagements. Not much seasonal decrease is expected and steel men entertain hopes that the second half of the year will be better than the first half, reversing the usual experience.

Prices are not at all steady on several finished steel products and there is a report that if marketing conditions do not improve the Steel corporation will come out with some open reductions.

CITIES SERVICE LINE TO MISSOURI TOWNS

The Cities Service Co. announces a pipe line will be constructed this summer from Ottawa, Kans., to serve a number of large and important cities in Missouri. Some of the towns to which natural gas will be available from this line include: Harrisonville, Warrensburg, Knobnoster, Holden, Higginsville, Pleasant Hill and Sedalia, Mo. The line may be extended to take in other important cities in that section of the State.

Work on the construction of the line will be started as soon as arrangements can be made and negotiations completed. Gas will be available to these towns before fall. Sedalia is now served with artificial gas by a Cities Service subsidiary, the City Light & Traction Co.

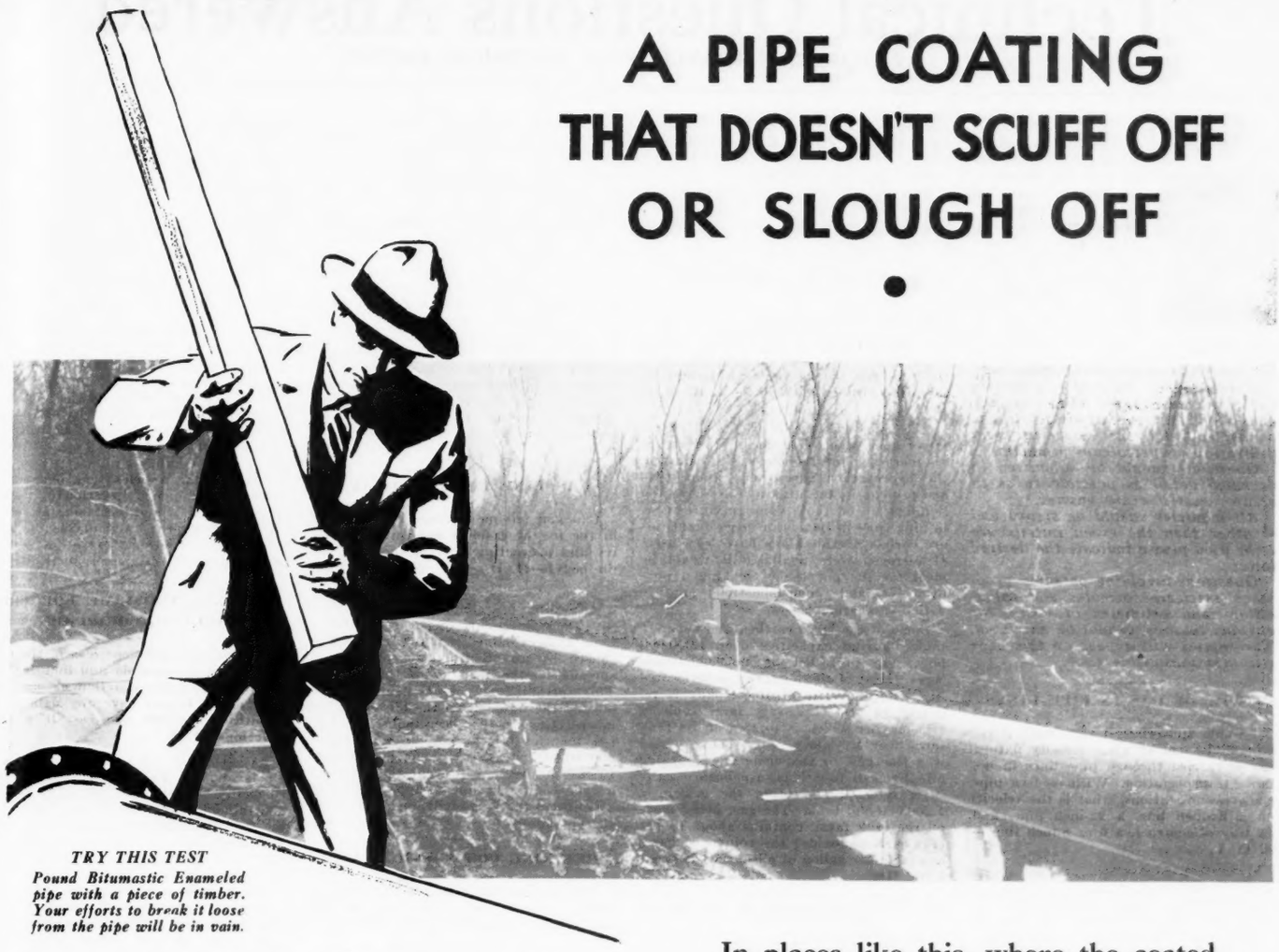
UNITED BUYS MORAN

HOUSTON, Tex., May 5.—United Gas Co. has purchased the natural gas transmission and distributing system of Moran Gas Corp. for a price in excess of $1,000,000. The Moran system contemplates construction of more than 31 miles of transmission line from White Point Field, San Patricio County, to the towns of Taft, Gregory, Portland, Aransas Pass and Ingleside, the latter being site of the Humble Oil & Refining Co.'s refinery and ocean loading terminal on Southwest Texas coast. The Moran corporation owns the distributing systems in all the towns named and its gas deliveries, both domestic and industrial, at this time total approximately 4,500,000 feet daily. There are a number of industrial plants served by the system apart from the Humble company's properties at Ingleside.

FOREMOST GAS EXTENSION

CHATHAM, Ontario, May 3.—Canadian Western Natural Gas Co. of Calgary is purchasing right of way for a pipe line to be extended from the company's main line to the town of Foremost, and has commenced construction of a regulating station.

A PIPE COATING THAT DOESN'T SCUFF OFF OR SLOUGH OFF



TRY THIS TEST
Pound Bitumastic Enameled pipe with a piece of timber. Your efforts to break it loose from the pipe will be in vain.

In places like this, where the coated pipe must be dragged over rough ground, the value of high initial adhesion is obvious. ***Bitumastic Enamel*** does not scuff off with rough handling or slough off with age. Its adhesion is permanent.

This is No. 3 in a series of advertisements on the 14 requirements for an adequate pipe coating.

There are 14 requirements for an effective pipe coating. It must:

1. be waterproof and remain so.
2. be unaffected by external chemical influences.
3. have strong and permanent adhesion to the pipe surface.
4. be inherently stable, inert and unchangeable.
5. be insoluable and incapable of absorption by surrounding soil.
6. be flexible to accommodate changing underground temperatures and resultant expansion and contraction.
7. be highly dielectric to prevent electrolysis.
8. be of substantial thickness on all surfaces.
9. be easily applied under field conditions.
10. be capable of withstanding ordinary handling without damage.
11. be sufficient in itself, requiring no wrappings.
12. be easily applied under any climatic condition.
13. be economically justified by its usefulness.
14. have an established record of proven performance.

BITUMASTIC
REG. U. S. PAT. OFF.
ENAMEL

WAILES DOVE-HERMISTON CORPORATION, 17 Battery Place, New York
Philtower Bldg., Tulsa

Philadelphia Cleveland Chicago Houston San Francisco Los Angeles

Technical Questions Answered

BY CHARLES K. FRANCIS, PH.D., TECHNICAL EDITOR

This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry.

Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible so as to assure a satisfactory answer.

All inquiries should be signed and if other than the given initials are to be used please indicate the desired letters.

Questions involving patented processes, intricate formulas and calculations and estimates of costs, for obvious reasons, cannot be answered. The replies will appear on this page within a reasonable time.

FLOW OF GAS IN PIPE LINES

I would appreciate it very much if you will advise me at what velocity natural gas is carried through pipe lines in distance transportation. With modern pipe, compression stations, what is the velocity on a 24-inch line, a 22-inch pipe, and, by way of contrast, a 6 or 8-inch line?—J. C. Y.

The velocity, or flow, of gas in pipe lines is stated in terms of cubic feet per period of time at some definite pressure and a fixed temperature. The specific gravity of the gas must be considered. Pipe lines may be only a few miles long or they may extend for hundreds of miles; they may have a diameter ranging from 1 inch to 36 inches and operated under a very low initial or inlet pressure up to 1,000 pounds.

The Weymouth formula, Trans. A.S.M.E., Vol. 34, p. 1901, is used for calculating the estimated flow of gas through pipe lines. This formula is discussed in numerous books and the statements following represent the treatment in Natural Gas Handbook, by Diehl, page 343, etc.

$$Q = \frac{S71\ D^{2.667}}{\sqrt{L}} P_a^2 - P_d^2, \text{ in which}$$

Q = Quantity in cubic feet a day under following conditions: Base pressure, 14.65 pounds absolute (4 ounces); temperatures at 60° F.; specific gravity, 0.60.

D = Internal diameter of pipe in inches.

L = Length of line in miles from point where upstream pressure is obtained to point where downstream pressure is observed.

P_a = Upstream or inlet pressure in pounds per square inch absolute, being equal to the gauge pressure plus the atmospheric pressure.

P_d = Downstream or outlet pressure in pounds per square inch absolute.

There are many factors to be considered, but the change in capacity with increase of pipe diameter may be illustrated by considering a pipe line 60 miles long with an inlet pressure of 300 pounds and an outlet of 5 pounds; temperature 60° F., specific gravity 0.60, and the period 24 hours. The 8-inch line would deliver 8,970,000 cubic feet and if this line were replaced with an 18-inch line there would be delivered 70,100,000 cubic feet, all other conditions remaining the same.

This subject will be discussed in the Annual Pipe Line Number of The Oil and Gas Journal which is to appear June 5.

INERT GAS FOR FIRE PROTECTION

What gas is considered most satisfactory for replacing air in oil storage tanks as a protection against lightning and fire? Is this scheme in use anywhere in the Mid-Continent district?—V. R. M.

The type and size of the tank are of importance when considering the use of an inert gas for the purpose of diluting the hydrocarbon gases and vapors that are present in the atmosphere above the liquid in an oil tank. Some mixtures containing carbon dioxide in large quantities are carbon dioxide alone have been used. If nitrogen were available it would be ideal for the purpose of making a non-explosive and noncombustible mixture with hydrocarbon gases.

Some of the large earthen and concrete tanks, having capacities over 1,000,000 bbls., are protected by noncombustible gases. Most of these appear to be located in California. The Shell company is reported to protect a very large tank in this manner which is located on its tank farm near McCamey, Tex. The gas used is a flue gas, or gas made from burning oil. From 6 to 8 bbls. are burned daily in a retort for diluting the gas in a 1,200,000-bbl. tank. The gas, being made on the tank farm, contains about 15 per cent carbon dioxide; the volume of gases available per gallon of oil burned is about 1,300 feet.

GRADING PETROLEUM PRODUCTS

Would be pleased to know just what governs the value of any given product or what is the primary requisite in determining the value of gasoline, lub. oils, etc. For instance in gasoline whether gravity or boiling points govern; in lubricating oils whether viscosity or pour-points govern etc.?—E. L. U.

The selection of any one property of a petroleum product would be of little value for the grading of the materials or for determining its utility. The ordinary specifications require the various petroleum products to meet certain values that are determined by means of physical test methods, and a few chemical analyses. The needs of the purchaser govern whether a product must meet one or two specifications or whether it shall be required to pass every one of large number of detailed tests.

Probably gravity is of less value than any other property used for the grading of a petroleum product. In some instances it is important, especially in arriving at transportation expense and when weight has to be considered. In general gravity should not be used for anything more than a very approximate classification.

So far as common practice is concerned, distillation, for the determination of the original boiling point, the per cent temperatures and the final boiling temperature, or endpoint, total recovery and loss, is the most important test that is applied to gasoline. The distillation test furnishes the data required for the classification of gasoline with respect to volatility. During the early days of the petroleum industry high gravities were desired and as the lighter products are indicated by the larger numbers the term "high test" resulted. With the development of the automobile engine gravity became of less importance than volatility. Now a definite knock rating, a property not mentioned a few years ago, is an essential specification to some purchasers.

It is doubtful if anyone would purchase on viscosity, when considering lubricating oils. A solution of sugar in water might be of the required viscosity but would certainly not meet other requirements. The grading of a lubricating oil quite frequently starts with viscosity, so this property may be considered the most important one, but a high grade lubricating oil will be required to pass several set standards. These may include—viscosity at several temperatures, flashpoint, pourpoint, carbon residue, absence of corrosive substances and be free from water.

GASOLINE FOR POISON IVY

Can you tell me if there is any merit in the use of gasoline for curing poison ivy and preventing it from spreading on the body?—H. H.

According to reliable medical authorities there is no cure of poison ivy infection. It is explained that the irritation is caused by an oil from the plants and spreads in the flesh from the blisters. This spreading may be controlled if the oil and the liquid from the blisters is removed. Gasoline has been found very satisfactory for this purpose in some cases, and when applied early enough after the first exposure may prevent the infection of the skin. Frequent applications of gasoline to the parts will tend to prevent the spreading.

REFINING COSTS AND YIELDS

Will you advise me as soon as practical names of books and publications on costs and yields for oil refineries?—E. L. U.

The Oil and Gas Journal has, on several occasions, published articles relating to yields and refining costs. The many different conditions make it difficult to arrive at an average cost for any one product. This matter was treated in some detail by W. T. Anderson in the issue of March 20, 1924. Mr. Anderson stated:

"The Federal Trade Commission in a pamphlet on methods of cost finding, issued April 7, 1921, outlined the ascertainment of refinery costs on this basis: From a barrel of crude the gasoline yield was 24.45 per cent; kerosene 8.60; gas and fuel oil 55.00; lubricating oils 6.75; wax 0.85; miscellaneous 1.00, and a loss of 3.53 per cent. Stated in gallons this yield from a 42 gallon barrel of crude oil was: Gasoline 10.27 gallons; kerosone 3.61; gas and fuel oils 23.10 gallons; lubricating oils 2.76; wax equal to 3.6 and miscellaneous 0.42, with a loss of 1.48 gallons. The cost of the crude at 6.2 cents a gallon and the refinery operation which produced these products amounted to $3.41 and a fraction. This meant that the cost of refining was approximately 82 cents a barrel.

"Without attempting to establish an average, because of the uncertainties of both the products and the refining business, and simply to give the public an approximate idea of the range of costs and profits, the cost of the crude to the refinery in this case was 6.2 cents a gallon or $2.60 a bbl.; the whole cost of refining brought 8.5 cents a barrel profit; the wholesaler after paying 2.5 cents for transportation, had about 3.5 cents a gallon to pay his other expenses and profit. . . . the retailer disposed of it at a margin of 2 cents a gallon." Add the state tax and the final cost to the consumer becomes 17.5 to 20.5 etc., a gallon.

An analytical study of this subject was made by C. O. Willson in the same issue of The Oil and Gas Journal. The Gasoline and Crude Price Relation is the title of another article by Mr. Willson in the Journal December 1, 1927, page 158; also the cost of refining was discussed in the same issue, page 151, by W. T. Ziegenhain.

Some of the articles that have to be considered include: Location of the refinery; quality and cost of the crude oil; water supply; proximity to the market; type of refinery; extent of separation and quality of the products.

AMMONIA AND LIME FOR CORRECTING CORROSION

Can you give me some idea of the relative values of ammonia and lime for correcting the corrosive action of high sulphur oils? If you have any data about quantities required and cost it will be welcome.—R. F.

Ammonia is not used so much for the correction of sulphur corrosion as for neutralizing hydrochloric acid produced by the decomposition of the chlorides. Hydrated lime has been found satisfactory in many instances for reducing sulphur corrosion.

There were several papers on corrosion presented before the American Petroleum Institute, Chicago, December 4, 1929; the material following is taken from the paper by Walter Samans, Report of Committee on Refinery and Marine Corrosion.

"Installations are known where, with the use of caustic, it was necessary to renew the bottom collecting headers, gasoline coolers, and run-down lines in from three to six months; but when ammonia was substituted for caustic, the life of these parts has been increased to over a year.

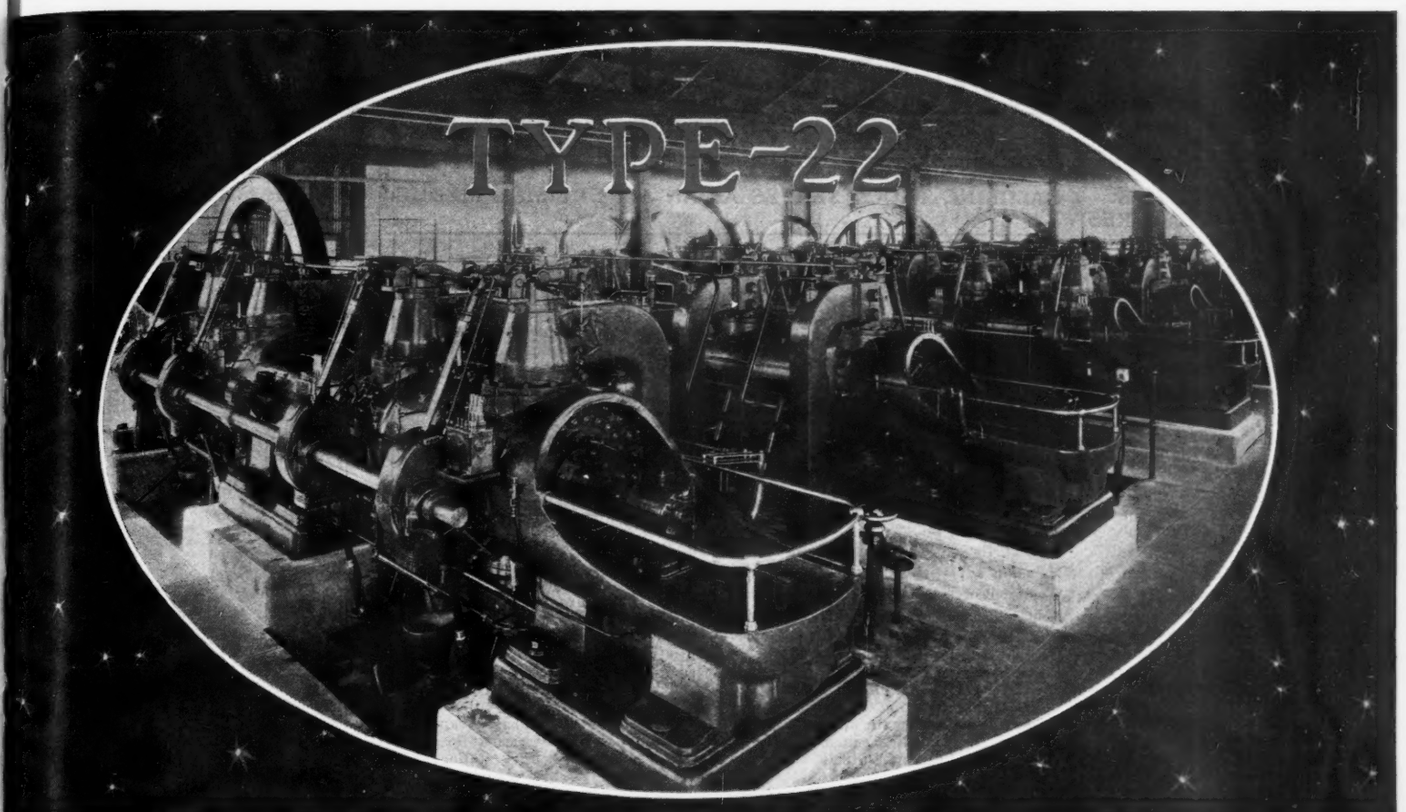
"The quantity of ammonia required varies from 3 to 25 pounds per 1,000 bbls. of crude processed."

Much care must be exercised with the use of caustic soda because of the tendency to promote hot spots; the difficulty in handling the sediment or sludge; and the danger of causing embrittlement of the tubes and shell.

Hydrated lime has given very good results for reducing sulphur corrosion. "Under the most severe conditions at the furnace outlet, the corrosion has been reduced from 0.136 inch penetration per 1,000 hours to 0.0225 inch penetration for the same period. This reduction is based on the injection of 0.25 pound of lime per barrel of crude oil charged, the crude being from the Winkler, West Texas, Field, containing 1.62 per cent sulphur. . . . . Results of using lime show that the life of tubes in the hottest part of the furnace has been increased from three months to well over a year."

MAINTENANCE COST OF 10,000-BBL. TUBE STILL

Repairs for 1,000,000 bbls. throughput due to corrosion	Cost per barrel, dollars: Actual maintenance	Cost of lime	Cost of ammonia	Total	Estimated maintenance cost per year—340 days
$11,000	1.1			1.1	$37,400.00
1,900	0.19	0.171	0.0425	0.4035	6,460.00
Saving maintenance only					30,940.00
Less cost neutralizers					6,780.00
Net saving per year					$24,160.00



AND ALL'S WELL

MIDNIGHT . . . a station full of Type-22's . . . operators on the round . . . engines up to speed . . . suction pressure at 75 . . . discharge pressure at 250 . . . water temperature normal . . . oil gauges right . . . flow meters O. K. — all's well!

Through the night, through the day, through the years, engine log-books everywhere tell an impressive story of Type-22's mastery of the load. During the last decade, Cooper-Bessemer 1000 B. H. P. units have been supplying approximately 90% of the power used on natural gas pipe lines.

THE COOPER-BESSEMER CORPORATION

Formerly The C. & G. Cooper Co. and The Bessemer Gas Engine Co.

Mount Vernon, Ohio Grove City, Pennsylvania

Branch offices in all principal gas and oil fields

YOU'RE ALWAYS SAFE IN CHOOSING A COOPER-BESSEMER

BESSEMER

EQUIPMENT AND SUPPLIES

NT MASTER SWITCH HAS VALUABLE NEW FEATURES

The NT master switch made by the Electric Controller & Manufacturing Co., Cleveland, Ohio, is designed to regulate the control circuits of a magnetic contactor controller, for use on cranes, hoists, ore bridges, steel mill machinery and other places where full-speed control from the master switch is desired.

The almost frictionless operation is due to the use of ball bearings, the short throw of the operating handle, the absence of gears, and the fact that the contact fingers always ride on uninterrupted plane surface. Contributing to the smooth and even operation, is an accurately machined, notched track, on which an improved roller-type centering device rides.

This permits the operator to feel the various speed points, the notch in the "off" position, of course, being machined more deeply than the others.

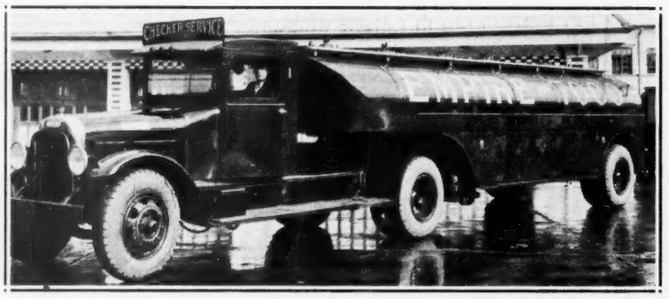
Particular attention has been given to make the width of this master switch as small as possible, so that when several of them are mounted in a crane cage or operator's pulpit, the operator, without moving his position, can reach and operate them. Other outstanding features are the straight line lever operation, the short throw of the handle and the fact that the master switch can be mounted in the upright or the inverted position which permits a close grouping of several of them.

As shown, this master switch is entirely enclosed by heavy gauge steel cover and is arranged for conduit connection. Both the contacts and contact fingers are of a greatly improved design and are easily renewable.

The Type NT master switches are built to give a maximum of six points of speed control in each direction with overload reset at the "off" position. Master switches for four, five or six points of speed control are identical, the only difference being the location of the arm stops. Since these stops are merely screwed into the main frame, they can be readily changed in the field to provide any one of these number of points of speed control, thereby reducing the spare-part problem.

"Acco Chain," a new chain information book published by the American Chain Co., Bridgeport, Conn., contains facts and figures concerning all types of welded chain, with tables of sizes, weights, loads and directions for taking measurements.

GASOLINE TRUCK SERVES AS AN ADVERTISING MEDIUM



That the motor truck can serve as a valuable advertising medium as well as a carrier of commodities is indicated by this big gasoline delivery trailer on a Federal chassis, one of the trucks operated by the Detroit Checker Cab Co. in serving cab service stations maintained by the organization throughout the city.

These big "moving billboards," long, powerful and trim in appearance, are said by the Checker company to be of great value in keeping their name and telephone before the people.

The trucks are a unit of the modern gasoline pumping, storing and delivery system recently installed by this company. Gasoline is pumped from tank cars into 10 large 20,000-gallon underground tanks and from these tanks into the trucks. Four pumps and a battery of 90 valves make it possible to pump gas from tank car to any tank, from any tank to any other tank, from any tank to truck, or reverse.

Each of the trucks has a capacity of 2,528 gallons and carries at least three loads per day to service stations which serve 2,200 taxicabs operating in Detroit.

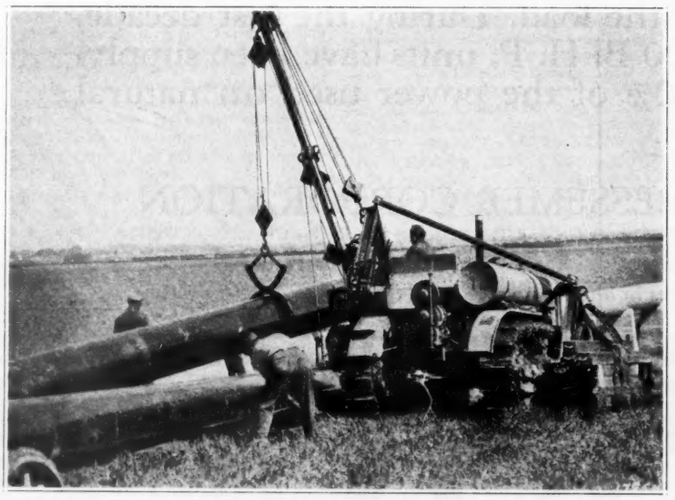
MR. WORTHEY VICE PRESIDENT

Fred A. Worthey has been made vice president of the Axelson Aircraft Engine Co. of Los Angeles, Calif. Mr. Worthey became identified with Axelson three years ago when he entered the sales department of the Axelson Machine Co. When the Axelson Aircraft Engine Co. was formed he was made sales manager and continued to act in this capacity until his recent promotion. As president of the California Air Industries Association, Mr. Worthey had much to do with the success of the Western Aeronautical Exposition held in Los Angeles last November. He is a director of the National Aeronautical Association and director and member of the executive committee of seven elected by the Motor Manufacturers Section of the Aeronautical Chamber of Commerce of America.

THOMAS HEADS READING IRON

Andrew J. Maloney, Leon E. Thomas, Randolph Stauffer, John M. Callen, P. N. Guthrie, Jr., and Raymond J. Wenger have been elected to the board of the Reading Iron Co. The reorganized board elected Leon E. Thomas president, John M. Callen and J. N. Guthrie, Jr., vice presidents, Raymond J. Wenger vice president, controller and assistant treasurer, Henry N. Yost treasurer, and George W. Delany secretary. Officers and directors of the Reading Iron Co. were made officers and directors of the Thomas Iron Co.

W-K-M PIPE BOOM MOUNTED ON "CATERPILLAR" SIXTY



W-K-M pipe boom mounted on "Caterpillar" Sixty, pulling by cable Continental engine on wheels to provide air pressure for welding, moving ahead at proper distance as tractor is moved. Sled with supplies dragged behind Continental.

JOSEPH McMULLAN MADE FOREIGN SALES MANAGER

Joseph V. McMullan has been appointed foreign sales manager of the Naylor Pipe Co., Chicago, with headquarters in the Chrysler Building, New York. Mr.

Joseph V. McMullan

McMullan has had a varied experience in iron and steel fabricating, hydraulic or pipe line dredging, and in the design, construction and operation of hydraulic dredges.

Since 1926, Mr. McMullan has been New York district sales manager of the Naylor Pipe Co. and prior to that was connected with the T. S. Marvel Shipbuilding Co., James Stewart & Co., Morris Machine Works, and the Gahagan Engineering Co. In addition to his new duties as foreign sales manager, Mr. McMullan will continue as New York district sales manager.

BUSINESS NOTES

The Chicago office of the Struthers-Wells Co., Warren, Pa., is now in the new Civic Opera Building, 20 North Wacker Drive.

The Chain Belt Co., Milwaukee, Wis., has appointed the J. D. Adams Manufacturing Co., Indianapolis, Ind., as exclusive distributor in the Indianapolis territory for the new Champion Rex paver and its companion, the Rex road pump.

Patrick H. Heeney, Apartado 298, Maracaibo, Venezuela, South America, has been appointed Tube-Turn distributor in Venezuela.

H. S. Ford, connected with the R. H. Beaumont Co. 15 years, has severed this connection to become associated with the Bigelow-Liptak Corp., 5057 Woodward Avenue, Detroit.

James C. McCluskey has been transferred to the San Francisco office of the Natural Gas Equipment, Inc., where he will assist John C. Newman, resident manager.

The Chain Belt Co., Milwaukee, Wis., has appointed the R. B. Everett Co., Houston Tex., as distributor for its complete line of Rex construction equipment, including saw rigs, plaster and mortar mixers, pumps (self-priming centrifugals, diaphragms, centrifugals and road pumps), concrete mixers, pavers, contractors' elevators, etc.

SETTING THE PACE WITH TRACKSON POWER

McCORMICK-DEERING

PIPE LINES stretch out in a hurry with Trackson on the job . . . Unloading the pipe from the cars, loading it on trucks, stabbing, stringing and lining it along the right-of-way, hoisting it for the dope gang, lowering it into the ditch . . . Snatching trucks, hauling welders, pulling rigs—hours saved with this dependable all-purpose power. Note the wide clearance between crawlers and motor for easy attachment of winch or boom. Trackson McCormick-Deering Crawler Tractors are sold and also *serviced* in all the oil fields.

Write now for full details.

Trackson Company

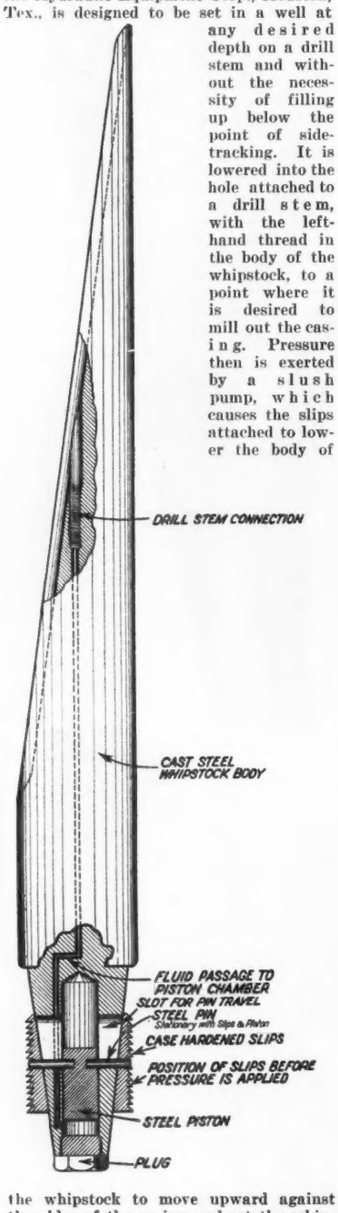
FULL-CRAWLERS & TRACTOR EQUIPMENT

1309 SOUTH FIRST ST. MILWAUKEE, WIS.

EQUIPMENT AND SUPPLIES

WHIPSTOCK IS OPERATED BY HYDRAULIC PRESSURE

The new hydraulic whipstock, made by the Hydraulic Equipment Corp., Houston, Tex., is designed to be set in a well at any desired depth on a drill stem and without the necessity of filling up below the point of sidetracking. It is lowered into the hole attached to a drill stem, with the left-hand thread in the body of the whipstock, to a point where it is desired to mill out the casing. Pressure then is exerted by a slush pump, which causes the slips attached to lower the body of


DRILL STEM CONNECTION
CAST STEEL WHIPSTOCK BODY
FLUID PASSAGE TO PISTON CHAMBER
SLOT FOR PIN TRAVEL
STEEL PIN Stationary with Slips & Piston
CASE HARDENED SLIPS
POSITION OF SLIPS BEFORE PRESSURE IS APPLIED
STEEL PISTON
PLUG

the whipstock to move upward against the sides of the casing and set the whipstock. The drillstem is then withdrawn by rotating to the right until the stem unscrews from the body of the whipstock. Teeth in the slips are machined both horizontally and vertically to prevent slipping or turning.

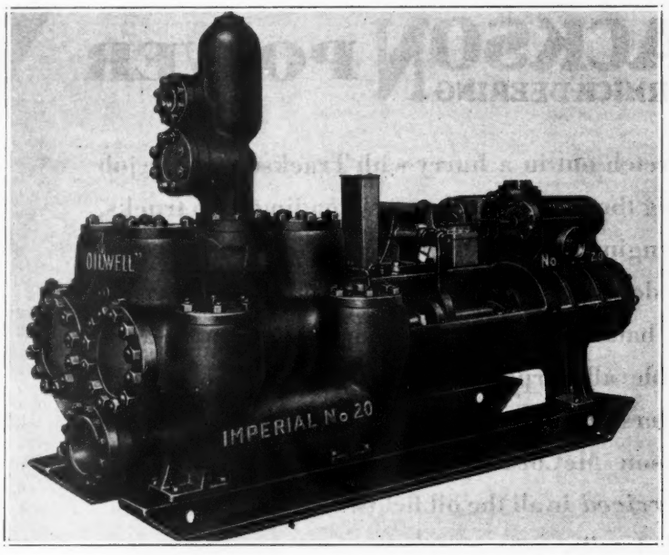
CHAIN BELT OFFICE MOVED

The New York office of the Chain Belt Co., Milwaukee, Wis., has been moved from 50 Church Street to the New Chrysler Building, 405 Lexington Avenue. The New York office looks after the company's line of Rex conveyors, chain and transmission, traveling water screens and construction equipment and the products of the Stearns Conveyor Co., a division of Chain Belt Co. W. H. Quinn is New York district manager.

OILWELL SLUSH PUMP HAS DISTINCTIVE FEATURES

Automatic lubrication, a new type liner spacer, and direct fluid flow are three of the distinctive features contributing to the strength and efficiency of the new Imperial No. 20 steam slush pump, built by the Oil Well Supply Co., Oil City, Pa.

In this 15"x7¾"x20" slush pump, this liner spacer eliminates all bolt adjustments through the cylinder head. It also permits the water piston to be removed without disturbing the liner and eliminates the necessity of packing and adjusting set-screws each time the piston



on the fluid head is removed. A special heavy duty liner rubber sleeve is held securely in place between the shoulders on the liner and the cylinder, which prevents leakage around the outside of the liner.

The proper amount of lubricant is continuously distributed at the right time by means of special automatic lubrication to all working parts. Built-in oil passages insure the feeding of clean, fresh oil by keeping out mud and dirt.

The fluid end, tested hydrostatically to 3,000 pounds at the factory, incorporates the principle of direct flow in which the friction and travel of the fluid in passing through the large, unrestricted passages of the fluid end are reduced to a minimum, thereby increasing the efficiency of the pump. The valve openings are of ample size and permit complete filling of the fluid cylinders at speeds much higher than normally used in the fields. With this extra large valve area the velocity of flow through the valves is reduced.

The Imperial No. 20 consists of three principal castings, fluid end, steam end, and air chamber, making assembly and maintenance of permanent alignment a simple matter. The fluid end casting consists of cylinders, valve chambers, suction manifold, and support feet. The steam end casting consists of steam cylinders, valve cylinders, and cradle; the air chamber casting consists of chamber, discharge passage, and strainer housing. The air chamber is conveniently located so as not to interfere with removal of valve covers or valve parts. Improved fluid packed valve cover gaskets are used.

D. M. pistons and cold drawn alloy steel piston rods, ground and polished aid in effecting smooth operation. Valves and valve seats are dropped-forged from alloy steel and are heat-treated. The valves may be reversed, doubling the usual life of the valves. Cylinder liners are seamless steel, pierced from solid forgings, carefully machined all over, and ground inside. All internal partitions in the fluid end are eliminated. This open-type construction of large steam line fluid passages not only reduces the possibility of mud cutting the walls, but also provides for easy inspection while the pump is in operation.

The steam end is designed for 350 pounds pressure and contains balanced steam piston valves, which reduce valve drag or friction; steam inlet on top, permitting connection from any direction; and steam exhaust connections on either side.

TRADE LITERATURE RECEIVED

Of interest to the oil industry is an article on "Aluminum Paints Used Industrially" in the current number of "Graphite," published by the Joseph Dixon Crucible Co., Jersey City, N. J.

The International Nickel Co., Inc., New York, is sending out in the form of a bulletin an article on "Nickel-Chromium Steels for High-Temperature Service" by V. T. Malcolm, metallurgical engineer with the Chapman Valve Co.

"Hytempite in the Power Plant" is the title of a bulletin being sent out by the Quigley Furnace Specialties Co., New York, describing the use of this product for boiler settings, baffles, special shapes, repairs, etc.

The initial number of Link-Belt News, dedicated to "better ways of driving machinery and handling materials," has been issued by the Link-Belt Co. It is attractively printed in colors and contains 22 pages of interesting reading.

TITUSVILLE IRON AGENCY

It was stated erroneously in The Oil and Gas Journal of April 17 that the Mid-Continent Supply Co. was agent for the Titusville Iron Works Co. in Texas, Oklahoma, Arkansas and Louisiana. It should have been stated that the Mid-Continent Supply Co. is agent for the Titusville Iron Works Co. in Southeast Texas, Louisiana and Arkansas.

TANT NOW PRESIDENT OF OIL BURNER ASSOCIATION

Walter F. Tant, president of the Silent Automatic Corp. of Detroit, Mich., was elected president of the American Oil Burner Association at the seventh annual convention of the organization. Other officers elected were: Vice presidents, H

Walter F. Tant

Finnie, Timken-Detroit Co., Detroit; W. J. Smith, Cleveland Steel Products Corp., Cleveland, Ohio; W. C. McTarnahan, Petroleum Heat & Power Co., New York; J. H. Hirsch, Automatic Burner Corp., Chicago; W. F. Schroeder, Schroeder Curry, St. Louis, Mo.

Mr. Tant has been president of Silent Automatic for five years. Before that he was secretary and treasurer of the Michigan Stamping Co.

NO CUPS OR PLUNGERS NEEDED BY THIS PUMP

A pump for oil and water wells that uses no cups or plungers and lifts the fluid only as it collects in the bottom of the hole, has been completed by S. M. Pankey, chief engineer for the Arkansas Natural Gas Corp. at its Trees compressor station, in Emmet, Ark.

The main feature of the lift mechanism is its lack of moving parts. The pump proper consists merely of two valves with pipes carrying compressed air down the hole. The plant is animated by a central compressing station, powered by a small gasoline or electric motor; and one compressor can handle dozens of small wells, according to Mr. Pankey.

The inventor says his device is particularly attractive to oil men who have been forbidden to lift petroleum with natural gas, and who are gradually being denied the right to use air-jammers. The blowing of wells with natural gas was stopped in the El Dorado Field several years ago.

With Mr. Pankey's device, oil or water is lifted from a well only as fast as it collects in the bottom of the hole through natural drainage from the oil bearing or water-bearing strata. There is no abnormal thrust put upon the well and therefore sand is eliminated from the mechanism, reducing the possibility of clogging.

Mr. Pankey has obtained patents in the United States, Canada and Mexico.

He expects to start manufacture of his new invention soon. He has been an engineer for the Arkansas Natural 17 years

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Natural Gas Developments

Public Relations Are Important in Life of Natural Gas Company

By R. E. Haas

Director of Public Relations, Columbia Gas & Electric Corp., New York*

When natural gas men get together it is logical that the discussion among them should turn to proven acreage, royalties, pipe lines, pressure control, drilling wells, main line extensions and gas purchase contracts. But let us put away the well logs, the maps, the production report, the legal documents and the financial records and consider an equally important phase of the natural gas business, our public relations.

There may be some who say, "Why should I be interested in public opinion? I'm a producer of natural gas only and have no contact with the public." The very nature of this business is such that everyone connected with it is directly or indirectly affected by public opinion and the future progress and welfare of the industry will depend largely in our endeavor to arouse a greater consciousness and appreciation in the minds of our customers and the public of our products and services. Several weeks ago several business men were sitting in the smoking compartment of a Pullman car and the conversation turned to natural gas. One of the men exclaimed, "I don't see why natural gas should cost so much. Why, all you have to do is to stick a piece of pipe in the ground and you get gas."

True the natural gas industry as a whole has received attention from investors, the press and its customers especially during the past year and a half. But the rapid expansion of the industry with its accompanying publicity and activity has brought increasing responsibility and additional problems to our doors.

Every phase of public utility activity, financing, consolidation, sales, competition, rates, franchises, rights of way, regulation, is dependent upon amicable relationships; lacking public confidence, securities cannot be marketed, sales increased, rates adjusted or franchises secured on terms mutually advantageous to both the public and the company.

Developing public relations and a favorable reputation is part of the everyday activities of every employe every hour of the day.

To launch a public relations program for a limited period, only to let it drift with the ebbing tide onto the rocks, is of little or no value and entirely without lasting effect. For a company to contemplate that it has done certain things for the benefit of the public with the illusion that its work along good will lines has been accomplished and that it can progress on past accomplishments, is not keeping abreast of the times.

*Before May convention, Natural Gas Department A.G.A., New Orleans.

BUYS STAMFORD GAS CO.

The Community Natural Gas Co. of Sweetwater, Tex., a subsidiary of the Lone Star Gas Co., has purchased the Stamford & Western Gas Co. which serves 21 West Texas towns. L. M. School of Sweetwater will be in charge of the company at that place.

GAS FOR FOREMOST

CHATHAM, Ontario, May 3.—Canadian Western Natural Gas Co. of Calgary is selecting a location for a regulating station at Foremost, Alberta, preparatory to extending its gas service to that town.

INTERCONNECTING POOL IN THE MIDDLE WEST

An extensive interconnected super gas pool operating throughout the Middle West will soon come into existence through the grouping of natural and manufactured gas utilities controlled by the Moody-Seagraves interests, the United Light & Power system, the North American Light & Power Co. and the Lone Star Gas Corp. The states affected by this interconnection, which does not affect control of the distributing companies, will be Nebraska, Iowa, Kansas, Missouri, Oklahoma and Texas.

The pool will result from the arrangements made by the Missouri Valley Gas Co., controlled by the Moody-Seagraves Co., with a group of utility companies controlling artificial and natural gas plants in central Kansas, eastern Nebraska and western and central Iowa, which are planning to expand their gas marketing facilities throughout this territory.

The Missouri Valley Gas Co. is now building the 24-inch pipe line from Stevens County, Kansas, toward Lincoln and Omaha, Neb. The combined group owns extensive holdings of natural gas acreage in the Panhandle Field of northern Texas. It is planned immediately to extend pipe lines of large capacity into the Panhandle fields to augment the gas reserves in Stevens County, Kansas.

The Lone Star Gas Corp. owns manufactured gas plants in Council Bluffs, Iowa, and important acreage in the Texas Panhandle. It also owns and operates one of the largest natural gas systems in the country, having about 280,000 consumers in Texas and Oklahoma, including the cities of Dallas, Fort Worth and Wichita Falls, Tex.

The United Light & Power Co. owns manufactured gas plants in Lincoln and Beatrice, Neb., Red Oak, Shenandoah, Fort Dodge, Mason City and Clear Lake, Iowa, and other cities in Nebraska and central and western Iowa. Its gas operations are expected to be concentrated under the management of its subsidiary, the American Light & Traction Co.

The North American Light & Power Co., of which Middle West Utilities and the North American Co. share the control, owns manufactured gas plants in Des Moines, Iowa, and in adjacent territory. Through its subsidiary, the Nebraska Natural Gas Co., it has franchises in a number of communities in eastern Nebraska and owns an extensive natural gas system in Kansas tapping fields in that State.

CALIFORNIA'S FIRST GAS

Natural gas is not as new a commodity in California as recent activities in its distribution might indicate, according to W. S. Yard, vice president of the Pacific Gas Co. Mr. Yard told the Bond Club Stockton obtained natural gas in 1854 when a well drilled near the courthouse developed as a gas producer. It was the first in the State to be developed for commercial use, Mr. Yard declared, Sacramento following.

CARDSTON GAS PROPOSITION

CHATHAM, Ontario, May 3.—Arthur K. Whiston and associates of Vegreville, Alberta, are negotiating with the municipality of Cardston for a franchise to supply natural gas to the town. The Whiston syndicate proposes to develop production on a structure close to Cardston.

REGULATING PLANT BURNED

CHATHAM, Ontario, May 3.—The gas regulating plant of the Canadian Western Natural Gas Co. at Bow Island, Alberta, was recently destroyed by fire.

PRESIDENT MULLANEY SOUNDS WARNING NOTE

The gas industry is on the eve of important forward development, according to Bernard J. Mullaney, president of the American Gas Association, and vice president of Peoples Gas Light & Coke Co., who, however, sounded a note of warning in connection with the numerous natural gas promotions now engaging the attention of the investing public. On this subject he said: "From the investment viewpoint there is only one cautionary suggestion to be offered. Natural gas development is coming on at a rate so spectacularly rapid that, like all new and spectacular businesses, it may be expected to attract promoters of natural gas projects whose company-promoting zeal is not adequately counterbalanced by experience in gas company management and by due regard for the responsibilities of management.

"This is always a consideration to be taken into account in choosing an investment security. It has been well said that a gas well, a pipe line and some prospective customers do not necessarily make a successful gas business. It takes management to make the business go. The character and experience of that management are of prime importance to the prospective investor."

The possibilities of the gas industry as a field for investment, and the principles which should guide the investor in making his selections, were summarized by Mr. Mullaney as follows: "The gas industry is unsurpassed as a field for investment—not for speculation, but for investment. It offers no lure of extraordinary profits. On the other hand, the risk of loss is reduced to a minimum, by reason of the long and seasoned character of the industry, when the investment is prudently chosen.

"In making this choice, there are four main questions to be asked: (1) Does the gas company, whose security you are considering, operate in a productive territory, with reasonable prospects for growth and expansion? (2) Are the company's property and its sources of supply adequate in extent and physical condition for the demands upon them? (3) Is the management of the company alert, interprising, competent and honest? (4)Are the industrial and public relations of the company satisfactorily wholesome—does it get along harmoniously with its employes, with its customers, and with the general public, including the regulatory authorities? For if these relations are good, the company is not likely to be politically harassed."

GOOD GASSERS IN NEW YORK

DUNKIRK, N. Y., May 5.—The Finance Oil & Gas Co. brought in a gas well on the Nettie Arnold farm in the town of Perrysburg, in what is known as the Nashville Field, late Wednesday afternoon, which has an open flow of nearly 5,000,000 cubic feet daily, according to the initial gauging. It is the sixth successful well in excess of 2,500,000 feet, Dunkirk advices state. The company is one of those of the late Senator A. T. Fancher of Salamanca.

PROTEST MONTANA RATE

CASPER, Wyo., May. 3.—Towns and cities in the northeast part of Montana that have enjoyed low prices for natural gas are protesting against the new proposed rate of 75 cents per 1,000 feet. Up to a short time ago, two gas companies were serving these towns, then merged and the new firm asked the State Public Utilities Commission to permit the raising of the rate from 15 cents to 75 cents.

FUNDAMENTAL RELATION IN NATURAL GAS FLOW

An investigation of the fundamental relations involved in the flow of natural gas through gas sands and of the relationships between gas flow and gas well capacity is being conducted at the Petroleum Experiment Station, maintained by the United States Bureau of Mines, Department of Commerce, and the State of Oklahoma at Bartlesville.

The basic thought of the fundamental relation between the three factors (A) rock or formation pressure in the sand, (B) back pressure at the sand face of the well, and (C) the rate of flow from the well, is that the sand of any particular gas well can be calibrated for its capacity to deliver gas from any formation pressure into any back pressure. In other words, a straight line relation between rate of flow and the difference of the squares of the formation and back pressures should be applicable throughout the producing life of a gas well. This has been found true of a large number of gas wells, where there evidently have not been any changes in the actual condition of the sand in the well. However, in a few cases, changes have taken place, and as the well becomes older, although the slope of the straight line remains practically constant, the position of the line is changed. This indicates that the capacity of the well to deliver gas decreases faster than it should. In some other cases both the slope and coefficient changed. In such wells it is not possible to decide on any certain basic test and gauge the capacity at later periods by observing a formation pressure, but periodic tests are essential. The relations for such a well at different periods of the producing life certainly give an interesting picture of the changes in the well when the relations are all plotted on one page.

UNITED LIGHT MAY SELL GAS

NEW YORK, May 3.—New developments in United Light & Power situation are expected to take the form of an announcement in the near future that the company plans to enter the natural gas field on an extensive scale.

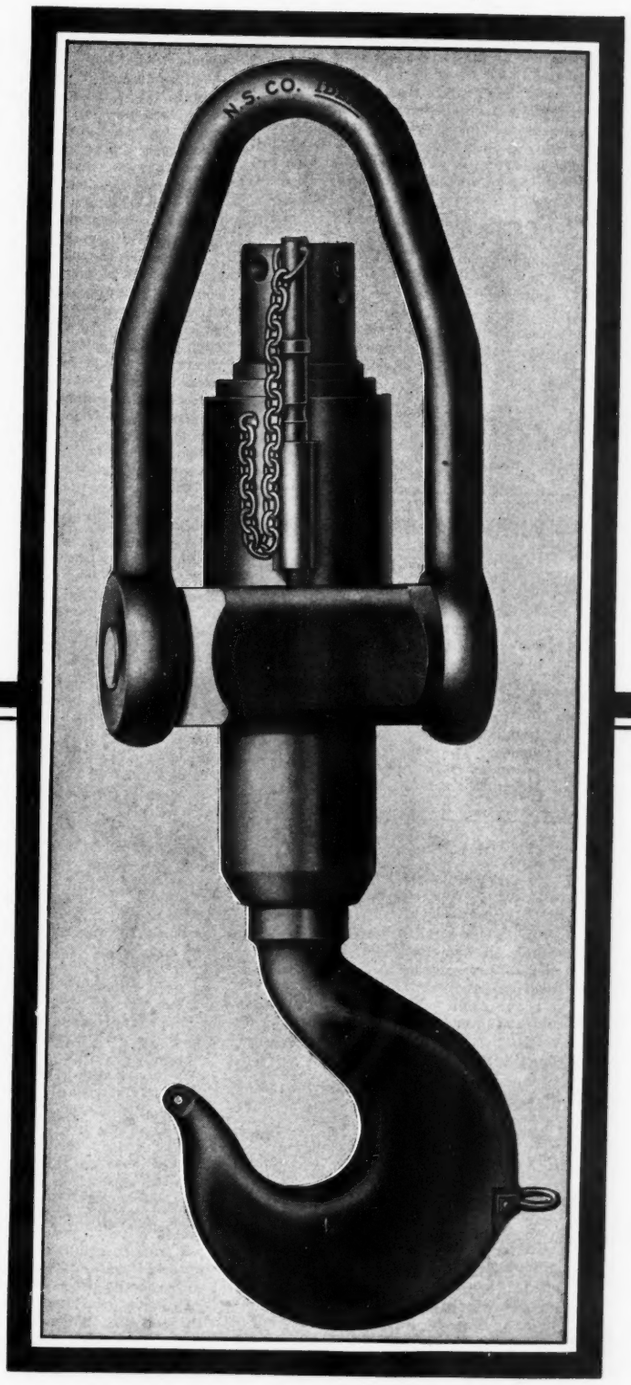
It is understood that American Light & Traction, the largest subsidiary of United Light, which the latter controls through stock ownership of more than 55 per cent, has purchased substantial acreage in natural gas fields in Kansas and various rights of way for pipe line extensions.

Development plans in this connection, according to reports, will call for lines to serve Omaha and Lincoln. It is expected that this initial entry into the natural gas field will lead ultimately to extension of service to a wide area in Nebraska, Kansas, Missouri and Iowa.

CONSOLIDATED EXPANSION

NEW YORK, May 3.—Consolidated Gas Co. of New York has started a $4,500,000 expansion program at its gas manufacturing plant at Hunts Point, N. Y., designed to increase the production by 10,000,000 feet daily. Construction work has been started on 37 coke gas ovens, to supplement the battery of 74 ovens now producing 20,000,000 feet daily. The new battery will be in operation early in 1931. Consolidated Gas is expanding its various gas manufacturing plants to remove all manufacturing operations from Manhattan. Completion of the Hunt's Point expansion program will give the company total daily gas manufacturing capacity of 229,000,000 feet.

IDEAL



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THE
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COMPANIES

Field Problems and Their Solution

EDITED BY THOMAS F. SMILEY

In order that men connected with the drilling, producing and transporting branches of the petroleum industry may procure quickly a solution of many problems confronting them from time to time in their work, The Oil and Gas Journal has arranged with leading engineers and other recognized authorities to answer questions submitted by readers of this publication pertaining to the work of drilling and producing crude oil and transporting this product.

Everyone is invited to submit questions freely. These questions will be submitted to proper authorities by Mr. Smiley, who edits the page, and answers, based on the best available information, will be published. Each question should give as much detail as possible, especially where it relates to matters where depths of sands, types of sands and operations on adjoining properties would have a bearing on the problem involved. The source of all questions will be considered as confidential and only initials will be published in connection with the question.

In this connection, The Oil and Gas Journal will be glad to publish articles from field men who have devised new methods or practices which are improvements.

In case an immediate answer is important, one will be given by mail if the writer requests it.

MORE ON WATER PROBLEM

Thank you very much for your answer to our question in The Oil and Gas Journal of April 3, but it does not quite answer the question we desired help on, in all probability because we did not make the question clear.

Our hole has 900 feet of salt water in it. We are continuing to drill with this water in the hole. The question is this: If we ran into an oil-bearing sand while this water was still in the hole, would it then be impossible to bring in the oil owing to the water not having been shut off? We do not know the underground stratified formations and do not know when we might run into another water sand instead of oil. If we ran into an oil sand with the water still in the hole would there be enough showing of oil to indicate it if the well did not encounter gas pressure sufficient to overcome the water?—L.S.M.

It would seem that the logical thing to do is to run a string of casing and shut off the water encountered at 932 feet and in this way prepare the well to be drilled deeper in a dry hole. This water can be shut off with a string of casing even though you do not have a good casing seat in a hard formation, for cement can be forced back of the casing and up the hole far enough to seal the present source of water. The hole then will have to be reduced in size and can be carried downward until another formation is encountered that carries either water or oil.

It is assumed that it is desired to keep the hole at its present size as long as possible so that the well can be drilled to the greatest depth possible and if reduced now it would mean that a second string of casing might be required later in the event another water sand is found which would make the lower part of the hole very small and perhaps prevent it being carried as deep as the driller now believes necessary.

If oil should be encountered in the present hole it will show through the water for it only requires a small amount of oil to show a "rainbow" on the water in the slush pit. If oil is encountered it should be possible to bail the well dry enough to permit casing to be run above the oil sand, but it would be better practice to reduce the hole before the lower oil sand is encountered.

As you do not desire to run the string of 8¼-inch casing to shut off the water encountered at 932 feet, is it not practical to underream the hole below the casing point for the 10½-inch casing and lower it to shut off this water? This would still leave you with the large hole and if the 10½-inch casing is properly reset it should give you dry hole from 932 feet to the next wet formation.

As this water has not flowed over the top of the casing it apparently has less than 900 feet head or is exerting a pressure of only 900x.434 pounds per foot or a total pressure of about 390 pounds per square inch. As the hole is lowered the head of water is built up and if you should drill several hundred feet before you set the 8¼-inch casing you might find that this upper water would force the oil back into its formation and cause trouble.

The worst trouble to be considered is the probability of forcing mud back into the sand formation carrying oil and sealing it off and if this is done the well would have to be shot to bring in the production.

BOOKS ON PETROLEUM

It is our understanding that you supply a list of books covering the geology and production of petroleum. If so, will you please send us a copy showing the dates of issue of the various publications? —W. M. O.

This department has no set list of books on petroleum geology and production which it recommends to inquirers, though it frequently has given lists in response to requests, perhaps never naming exactly the same books.

For the latest authoritative information on oil-field development and production one hardly can do better than get from year to year the "Transactions" of the Petroleum Division of the American Institute of Mining and Metallurgical Engineers. These volumes can be obtained for $5 each from the institute, 29 West Thirty-ninth Street, New York. The latest of these publications is the 1929 volume. A valuable library on various phases of petroleum production can be acquired at small cost by obtaining from the United States Bureau of Mines its various publications on petroleum engineering subjects. You can get a list of these by writing to the Bartlesville, Okla., station of the bureau. Then you can get the various papers and bulletins which you select by applying to the director of the Bureau of Mines, Washington, D. C.

Among useful books on petroleum production might be mentioned "Petroleum Production Engineering," by Lester C. Uren, 1924; "Deep Well Drilling," by Walter H. Jeffery, 1924 (Mr. Jeffery is preparing a new edition of his work), and "Handbook of the Petroleum Industry," by David T. Day, 1922.

Among useful books on petroleum geology might be mentioned "The Geology of Petroleum and Natural Gas," by Dr. Ernest Raymond Lilley, 1928, and "Practical Oil Geology," by Dorsey Hager. Although Mr. Hager's volume was published in 1919 it remains a standard work for beginners. "Field Methods in Petroleum Geology," by Cox, Drake and Muilenberg, and "Geologic Structures," by Bailey Willis and Robin Willis, are helpful books published by McGraw-Hill Book Co., New York, but their publication dates are not at hand.

TESTING ROCKS FOR OIL

I read a test, or rather a dozen or so tests, once for telling whether a sample of rock contains oil or not. I am not sure, but my recollection is that this test was called the Woodruff test. I would like to get hold of this test again, for it was the kind that doesn't need a laboratory to make use of it. The tests were simple, the kind that anybody could make, with just the things that are in almost any home, with just one or two chemicals that I suppose could be bought. If you are able to tell me what this test is I will be very much obliged.—A. D. I.

The method of testing rocks for petroleum which you read was doubtless that recommended by E. G. Woodruff. It follows, as published in Dorsey Hager's "Practical Oil Geology":

"1. Select a representative specimen of rock to be tested. To secure a representative sample, it is generally advisable to secure several samples as large as 1 to 5 pounds.

"2. Break them up, thoroughly mix the pieces. If sand, mix the sand.

"3. Dry the sample in the sun or over a radiator. Do not dry it over a fire; to do so may drive the oil from the rock or sand.

"4. Crush the sample to a powder. Mix the powder. Loose sand does not need to be crushed.

"5. Place about a tablespoonful of the sample in a bottle. Pour chloroform or carbon-tetra-chloride over the sample until it is thoroughly saturated and there is about a half tablespoonful of the liquid above the crushed rock or sand. Cork the bottle, but not too tightly. Shake occasionally for 15 or 20 minutes.

"6. Place a white filter paper in a glass funnel with a white enamel dish below the funnel.

"7. Pour the contents of the bottle into the funnel. After the liquid has filtered through, place the white dish in a window where the liquid can evaporate.

"8. Examine the filter paper. If the rock contains more than a trace, there will be a brown or black ring on the filter paper.

"9. After the liquid in the dish has evaporated, examine the remaining substance. It is the petroleum which was in the rock.

"Apparatus needed: One dinner plate upon which to dry specimens; some means for crushing rock; one or more bottles, 4 or 6-ounce size (with corks), in which to treat the rock; chloroform or carbon-tetra-chloride; one glass funnel 3 or 4 inches in diameter; two dozen round filter papers, 6 inches in diameter; two or more white dishes (the small serving dishes, such as are used at hotels, are good; they can be purchased at a 10-cent store)."

WHY WAS IT CALLED THAT?

BULL PUMP

"Bull pump" is the name given to a direct, single-acting pump, the steam cylinder of which is placed over the top of a shaft or slope and the piston rod attached to the pump rods. The steam lifts the piston and pump rods and the weight of these produces the down stroke. The bull-like strength and power of this type of pump suggested the name.

THAWING NITROGLYCERIN

Is nitroglycerin any more dangerous when it is frozen than at other times? Does freezing affect its explosive quality? What is the best way to thaw it out if that becomes necessary?—Y. N. S.

Your questions are answered in a paper which C. O. Rison, superintendent of the oil department of the Indian Territory Illuminating Oil Co., delivered before the New York meeting of the Petroleum Division of the American Institute of Mechanical Engineers in 1929. Mr. Rison says on this subject:

"As frozen explosives can be detonated only with difficulty, it is necessary that they be properly thawed before using if maximum efficiency is to be procured. To eliminate the objections arising from the tendency of nitroglycerin to freeze at comparatively high temperatures, admixtures have been used to lower the freezing point or to retard freezing by the formation of undercooled solutions. Such admixtures, which have been extensively used in some gelatinized explosives and nitroglycerin dynamites, which have attained wide use in the industrial field, include nitrated hydrocarbons or so-called nitro-substitution compounds, nitrated polyglycerins and nitroglycol.

"From a practical standpoint the use of certain admixtures in quantities sufficient to lower the freezing point of nitroglycerin to a satisfactory degree would be undesirable for the reason that the admixture would decrease the explosive energy and make detonation difficult.

"Obviously, liquid nitroglycerin can only be used in oil-well torpedoes in the unfrozen state. Generally speaking, the torpedo companies have devoted little study to the matter of decreasing the sensitiveness or lowering of the freezing point of their product.

"The thawing of frozen explosives requires time and extreme care. Improper methods have frequently resulted in serious and disastrous premature explosions, particularly with dynamite. It is dangerous to attempt to thaw a frozen explosive by placing it before a fire, near a boiler, on steam boxes or pipes, in extremely hot water, or in live steam.

"Cans containing frozen liquid nitroglycerin may be safely thawed by first carefully pulling the corks and then suspending the containers in a barrel of warm water. The temperature of the water should not exceed 50° C. (122° F.) or be uncomfortable to the immersed hand. While nitroglycerin is comparatively insensitive when completely frozen, it thaws slowly and is extremely sensitive during the thawing process. After the cans have been suspended in the barrel of warm water, any attempt to hurry the operation by putting additional hot water into the barrel is hazardous. Frozen gelatinized explosives, such as blasting gelatin (so-called solidified nitroglycerin), or gelatin dynamite (so-called torpedo gelatin) may be safely thawed by carefully putting the material in a grain bag and suspending the bag in a barrel of warm water. The temperature of the water should not exceed 50° C. (122° F.). After the gelatinized explosive has been thawed, the barrel should be removed from the locality and destroyed, because during thawing, nitroglycerin tends to separate from the other ingredients and sufficient exudation may settle to the bottom of the barrel later to cause an explosion.

"The idea of filling a torpedo shell with frozen gelatinized explosive and then subjecting the shell to a bath of live steam is about as dangerous as the experiment of holding a bag containing frozen gelatinized explosive against a steam engine exhaust."

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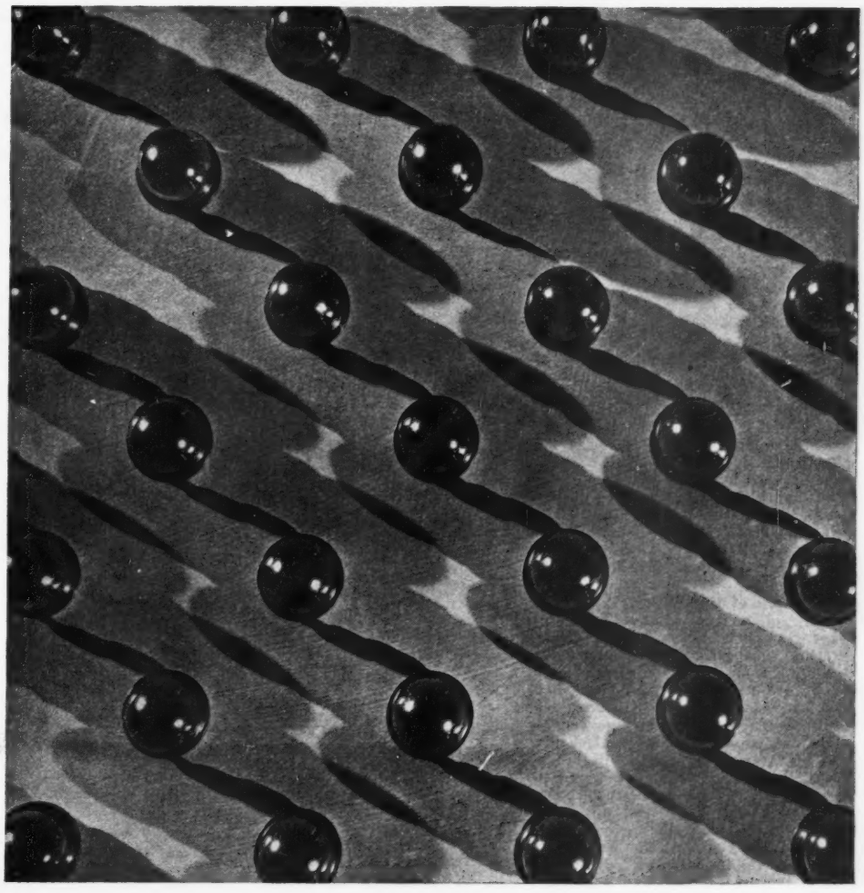

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Strain imposed upon seats and balls is better comprehended by considering the number of impacts over a given time. If a well is pumping at 20 strokes per minute, which means that the working and standing valves are each subjected to one impact on the up-stroke and down-stroke, the ball in either valve delivers approximately 4800 separate blows on the seat during a 24-hour per day service. This amounts to 854,000 impacts per month. Additional factors should be considered, including the contributing conditions of sand, gas, oil, water, weight of fluid column, abrasion action of the fluid, etc. The merit of Axloy Seats and Balls is fully appreciated, especially when runs of 6 months or more are invariably obtained. These seats and balls are made from rustless, seamless steel, and every surface is ground. Each ball is individually lapped to its seat. The product is highly resistant to abrasion and fatigue in any well.

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Significance of Cuba's New Oil Well

Showed Production Estimated at 4,000 Bbls., In First Few Hours But Is Now Put at 600 Bbls., Largest to Date.

By Charles C. Coulter
Petroleum Geologist

On January 30, 1930, The Oil and Gas Journal carried the following interesting information:

"Union Oil Co. of Cuba has completed its well No. 39 in the Bacuranao district, municipality of Guanabacoa, Habana, with an estimated initial flow at the rate of 4,000 bbls. daily. The district has hitherto produced small quantities of petroleum. The company is a Cuban organization, which is stated to hold 1,052 acres in the Bacuranao district."

Ten days following the opening of this well, the writer had occasion to visit and make surveys in two other localities in Cuba, and was requested by certain oil operators to make an investigation of the well. This has been deferred until such time as would justify a conservative appraisal of quantity following the initial flow.

The depth of this well is 728 feet to the top of a true oil sand, where a heavy gas pressure was encountered upon entering this sand, which, during the first few hours showed a production around 4,000 bbls. However, since there was a decided shortage of storage capacity available, either at the well, or at the newly erected refinery, which they were just completing in the Bacuranao Field, the owners were compelled to close it in. The refinery will now be enlarged to double the present capacity.

The well has not yet been completed, but upon being opened up three weeks later, with the intention of drilling deeper into the sand, gave a good account of itself, although they have not yet pipe line or storage to handle the probable production. It would appear conservative to estimate this well as being good for 600 bbls. daily production. This would stand as the largest producer in Cuba to date.

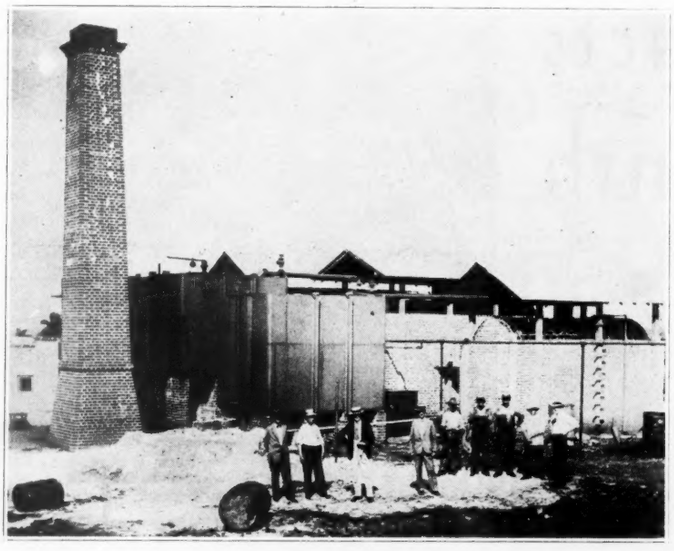
The owner of the well is Cia Union Petrolera de Cuba, which has been spasmodically operating in the Bacuranao Field for a dozen years, under Spanish direction, both as to geological advice and operating management. The officials point with considerable pride to a few acres from which they have already extracted $2,000,000 worth of crude within the past few years.

American Surveys

Historically speaking, the American geologists who have been instrumental in bringing the geophysical and geological development of the island forward since the days of Alexander de Humboldt in 1825-28, include such names as: Dr. David T. Day, Thomas Draper, John H. Blake, T. Hugh Boorman, C. Willard Hayes, A. C. Spencer, Ralph Arnold, T. Wayland Vaughn, Bailey Willis, Frederick G. Clapp, C. L. Jones, F. W. Green, J. L. Hance and others. At the time of the American occupation, 1898-1902, the United States Geological Survey sent a number of geologists to Cuba, who made reconnaissance surveys over the entire island of Cuba, under Gen. Leonard Wood, then military governor of Cuba, since which time but little work, comparatively speaking, has been added thereto by competent men. However, the individual and combined judgment of all these experts in their varied lines, seems to be conclusive in reporting as follows:

First.—That the complete geologic history of the island is fully represented (with the probable exception of the Miocene) from the Paleozoic, upper and lower Oligocene, Eocene, Cretaceous and Jura-Trias.

Second.—That from Cretaceous time there is abundant evidence of six different periods of subsidence. Various levels are developed as we find in the United States, but a most careful Paleontologic study is necessary in order to properly correlate the lithologic and geologic status.



Refinery at Bacuranao, Cuba, Field, capacity 250 bbls., now being enlarged owing to recently increased production.

Third.—That the great igneous upheaval, coexistent with the length of the island, naturally assuming a position in the middle part thereof, is represented by enormous areas of Serpentine and basalt, as well as granite and other of the Primary series, displacing laterally all overliers up to the Quaternary rocks. This series is found to be in segments rarely to exceed 50 miles in length.

Fourth. — Structurally, it is easily proven that these series were properly formed for oil and gas accumulation and retention, both of which have been proven and developed to the commercial state in different localities on the island.

Fifth.—That with consistent and proper technical and practical effort, the island of Cuba may easily be developed into a great producing oil and gas region, which with her immense well-known asphalt, gilsonite and other bituminous deposits, yet undeveloped, would easily give her, with all her advantages of soil, climate, rainfall and transportation, every possible economic advantage, as also an eager market at the highest price for the crude within her borders, a place in the sun, so far as an independent crude supply is concerned, as against the many millions now being annually expended for a foreign supply.

Previous Operations

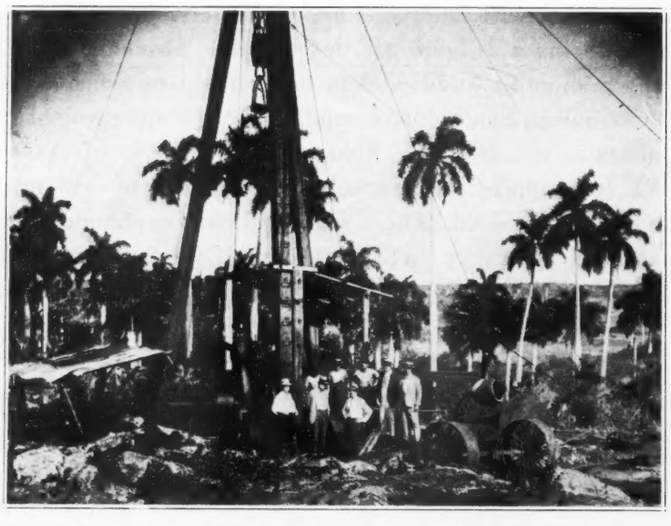
Out of five districts which have so far been drilled in Cuba, to such a depth as might be geologically expected to produce results, three of these now have oil in commercial quantity. In the Montembo district, Province of Santa Clara, wells have been brought in at around 1,500 feet, one of which had a flush production of but 150 bbls., and settled to a steady production of 54 bbls. for years—but of 70 degree gravity, water white gasoline-naphtha, which for years sold direct to the consumer for automobile use, without the necessity of any refining, and at a price of 40 cents per gallon. This is only surpassed, according to the writer's judgment in Turner Valley, Alberta, Canada.

There are numerous cases in Cuba where the operator has "dug" his own oil well with pick and shovel, and no further effort made to develop a larger production at lower levels.

A well was sunk at Camarioca, Province of Matanzas, in 1919, on a denouncement made by the late Dr. David T. Day. In this well, which is about 1,800 feet deep, there stands 1,300 feet of oil in the hole. It is very doubtful if this well was afforded the best location which could have been selected on this structure. This well remained unfinished due to the death of Doctor Day.

At this time there are six different tests, in as many different localities, in preparation for development of oil on the island of Cuba. These are almost all being drilled by American workers of prac-

(Continued on Page 237)



New producer in Bacuranao Field, Cuba, 15 miles east of Havana. Estimated production 600 bbls., in top of oil sand at only 728 feet. Specific gravity 27.8, paraffin base crude.

Section of Cuba's great $100,000 Central Highway nearing completion. It extends the entire length of the island, 750 miles.

The **POUNDING** and **SHOCK**
of the heaviest deep well drilling
doesn't hurt

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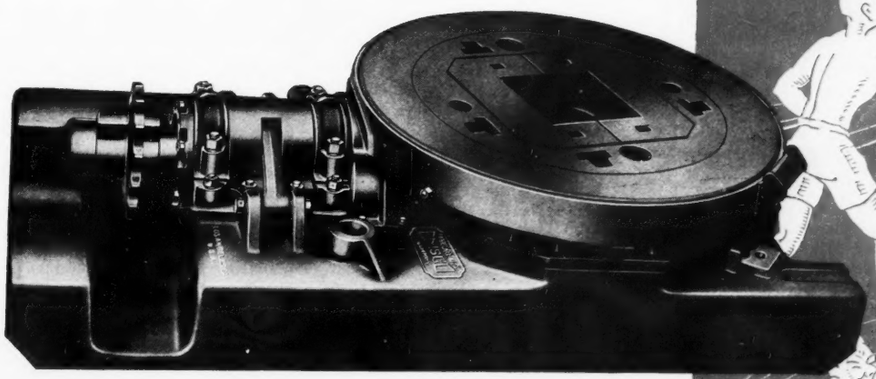
ALL STEEL ROTARIES



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J618

CONTINENTAL

MEN KNOWN IN OILDOM

Claude Wild

Claude Wild, attorney and former independent oil operator both in Central West Texas and in California, who has been chosen executive vice president of the Independent Petroleum Association of America, with headquarters at Fort Worth, Tex., has long been interested in oil. His father, the late J. E. Wild, was with The Texas Company for many years, and one of the first producing wells in West Texas outside the Burkburnett Pool was drilled on his land near Moran in Shackelford County. A native of Franklin, N. C., Mr. Wild was reared at Moran, attended preparatory schools at Stamford and Fort Worth, later the University of Texas, and was graduated from the University of Colorado. He was a first lieutenant and an instructor in the motor transport corps during the World War, practiced law for several years at Cisco and also engaged in the oil business as an independent operator.

Mr. Wild spent two years in California during a period of rapid petroleum development. He became assistant manager of the Amarillo, Tex., Board of City Development in 1926, and one of his first steps was to organize an oil division. Since July 1, 1927, he has been manager of the San Angelo, Tex., Board of City Development.

PERSONAL PARAGRAPHS

Linn Park, president of Portable Rig Company, Houston, Tex., spent several days in Tulsa and other Oklahoma points.

* * *

J. J. Kenney, Pittsburgh, Pa., assistant general manager of the Eureka Pipe Line Co., is attending a meeting in New York City.

* * *

E. L. Porch, consulting geologist, at San Antonio, Tex., recently spent some time in Mississippi studying the situation around Jackson.

* * *

J. R. Horrigan, vice president, Sheehan Pipe Line Construction Company, has returned from California where he spent his honeymoon.

* * *

Francis A. Dunigan, of the Dunigan Tool & Supply Company of Fort Worth, Tex., was lately a visitor to San Antonio, Tex.

* * *

J. W. Clune was elected vice president of the Wellington Oil Company at the annual meeting of the company held in Los Angeles recently.

* * *

George F. Getty, president of the George F. Getty Company, Inc., is seriously ill, having recently suffered a slight stroke of apoplexy.

J. A. Warren, secretary of the Kinney-Coastal Oil Company, has returned to the Denver, Colo., headquarters from a visit to the Oklahoma fields.

* * *

George Moore, of the Cosden Oil Company, Fort Worth Tex., is visiting his father at Daytona Beach, Fla., and will go from there to Chicago on company business.

* * *

Don Danvers, geologist and district manager for the Sinclair Oil & Gas Company at San Antonio, Tex., and Mrs. Danvers, are back from a trip to Panama.

* * *

W. R. McGinnis, of St. Louis, Mo., representative of the York Ice Machine Company, of York, Pa., was in Houston, Tex., for a few days on business.

* * *

John C. Nichlos, who has been in Austria since last June on special work for the Continental Oil Company, was in Farmington, N. Mex., following his return from Europe.

* * *

Friends of Northrop Clarey, executive of the Standard Oil Company of New Jersey, will be glad to know that he is rapidly recovering from an attack of pneumonia.

* * *

F. J. Baash, president of Baash-Ross Tool Company, is taking an extended motor trip throughout the Mid-Continent Field and will be gone from Los Angeles for about a month.

* * *

Dr. Justus H. Cline, formerly chief geologist for T. C. Johnson and the Derby Oil Company, now living on his plantation at Stuart's Draft, W. Va., is visiting in Wichita, Kans.

* * *

James H. Turner, district geologist for the Independent Oil & Gas Company, with offices at San Antonio, Tex., and Miss Elaine Pulliam of San Antonio were married recently.

* * *

Ray W. Perry, who has spent the past four months in South America for the MacClatchie Manufacturing Company, Compton, Calif., is aboard ship returning to the main office.

* * *

O. R. Seagraves, president of the United Gas Company, and chairman of the Freeport Texas Sulphur Company, has acquired an interest in the banking house of G. E. Barrett & Company.

* * *

H. A. Tanner, geologist with the Gulf Production Company, working out of the San Antonio, Tex., office, has been placed in charge of core drilling work of the company in East Texas.

* * *

R. L. Gay, whose activities were partly responsible for the discovery of the Zwolle and Blue Lake Fields in Sabine Parish, Louisiana, has returned to Zwolle from a course of treatments at the Mayo clinic.

* * *

H. A. Melat, production superintendent of the Gulf Production Company, Fort Worth, Tex., and T. W. Rhoades, production engineer of the company, are making a trip through the various oil fields of Oklahoma.

* * *

Lafe Todd has been appointed general superintendent of the northern division of the Union Oil Company of California and will in the future be in direct charge of all operations in the field, transportation and gas departments in the Coast and San Joaquin divisions.

* * *

Boyd McKinley, representative of the MacClatchie Manufacturing Company, Compton, Calif., in the Midway fields, is en route to Canada, where he will spent two months visiting the major Canadian oil fields. During his absence, Harry Driggs, Long Beach sales representative, will take over the Midway territory.

* * *

H. D. Ainslie, sales manager of the MacClatchie Manufacturing Company, Compton, Calif., has just left for the East on a trip of about two months' duration. Among the cities Mr. Ainslie is including in his itinerary are Casper, Wyo.; Toronto, Chicago, New York, and St. Louis, and on the return trip he plans to spend some time touring the Mid-Continent fields.

W. F. Chisholm, district superintendent for the Halliburton Oil Well Cementing Company, at Shreveport, La., attended a conference of the company's district representatives at the Duncan, Okla., headquarters.

* * *

Martin T. Rathvon, superintendent of operations for the Argo Oil Company, Casper, Wyo., traveled by automobile to the Deer Creek oil field in Oklahoma where the Argo has a number of oil and gas wells. He was accompanied by Mrs. Rathvon.

* * *

Charles W. Alcorn, superintendent for the West Texas district for the Shell Petroleum Corporation, spent a week in Tulsa and various fields in Oklahoma and Kansas visiting the superintendents and field men of the northern division of his company.

* * *

John Roberts, eastern Kansas scout for the Prairie Oil & Gas Company, stationed at Eureka, is ill with appendicitis. He is at his home in Fort Smith, Ark. Mr. Roberts formerly was chief clerk in the divisional offices at Wichita, Kans.

* * *

J. A. Clark, formerly assistant general superintendent of the Lago Petroleum Corporation in charge of field activities, has been appointed general superintendent of production to succeed E. Satchell, who has been assigned to duties outside of Venezuela.

* * *

Sid Roberts and Edward S. Bleecker, attached to the Venezuela Gulf Oil Company at Maracaibo, Venezuela, have come to the United States to be married to two sisters, Miss Anita and Miss Marguerite Heberer of Austin, Tex., whom they met in Venezuela last year.

* * *

Hope C. Dunbar, of the Bellview Oil Company, has succeeded H. R. Macmillan as president of the Santa Fe Springs Curtailment Committee, the latter recently resigning because of the press of business incident to activities of the California Oil and Gas Association and personal affairs.

* * *

J. J. Ferlin, president of the California Manufacturing & Engineering Company, is on an extended business trip to Houston and Tulsa. He also plans to visit the Mid-Continent and possibly Eastern fields. He contemplates an extensive survey of these territories, in addition to business duties.

* * *

Herbert R. Macmillan, president of the Herbert Macmillan Company, and president of the California Oil and Gas Association, has returned from Washington, D. C., where he recently addressed a meeting of natural resource industries leaders under the auspices of the United States Chamber of Commerce.

* * *

John N. Sandlin, land man in West Texas for the Arkansas Fuel Oil Company, with headquarters in San Angelo, Tex., has been transferred to Clarksville, Ark., where the company has many natural gas properties. J. T. Burlingame, formerly at Wichita Falls and Abilene succeeded Mr. Sandlin at San Angelo, Tex.

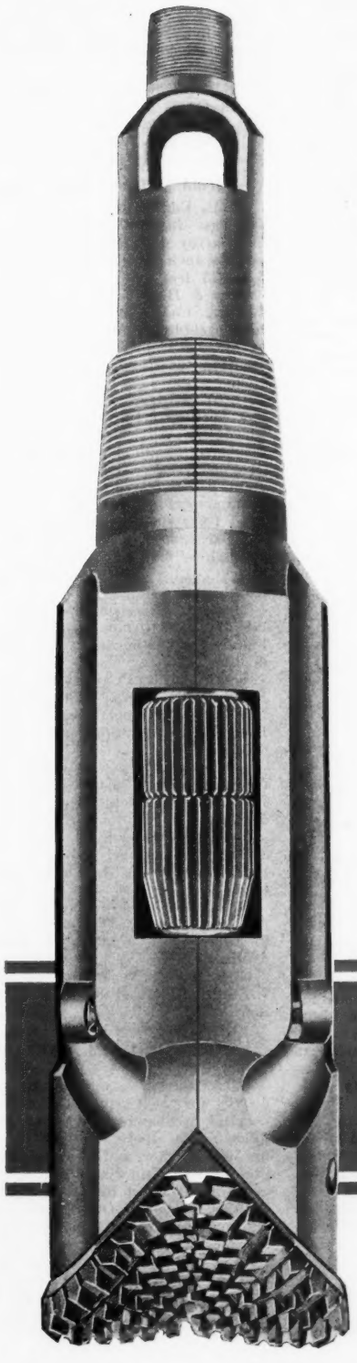
* * *

Officials of the Continental Oil Company made an inspection tour of Richmond, Va., and vicinity. They were E. S. Karstedt, vice president in charge of marketing; D. J. Moran, president; Walter Miller, vice president in charge of refining; H. J. Kenedy, sales manager; Arthur Lawrence, director; Frank Moore, special representative; C. R. McCarthy, eastern sales manager; L. R. Wilson, assistant vice president; C. F. Smith, treasurer. They went to Richmond in a private car.

* * *

The production department committee of The Texas Company visited Oklahoma and Kansas during the week on the regular annual tour of inspection of the company's producing properties. The party included: R. Ogarrio, vice president, New York; J. A. Bermingham, vice president in charge of production, Los Angeles; V. L. Porter, assistant to vice president, New York; R. F. Baker, chief geologist, New York; E. D. Hopkins, secretary to vice president, New York; and the following division managers: W. B. Bowles, Houston, Tex.; L. E. Barrows, Fort Worth, Tex.; L. C. Stewart, Shreveport, La.; J. L. McMahon, Wichita Falls, Tex.; A. S. Wilson, Denver, Colo.; and E. R. Filley, Tulsa.

DESIGN
MATERIAL
WORKMANSHIP
TESTS



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Woolworth Building
New York City, N. Y.

"Sold By Supply Stores Everywhere"

SOUTHWEST TEXAS

(Continued from Page 78)

as $25 an acre, indicating a rather keen interest.

Heavy Rains

Heavy rains all over Southwest Texas and especially near the coast very greatly delayed operations everywhere.

National Oil Co.'s No. 1 Adams in Zapata County that has opened up something new is soon to be tested out and probably deepened. While shut down for want of water the operators started laying a pipe line and got it completed just when the biggest rain in history came. Now they are connecting up with their own water supply and will soon be operating. The test at less than 1,000 feet while shut down started to make gas. A tractor engine was brought in and pumped a little of the mud out and it blew in and looked bad for a time. Evidently it means a new field of some kind.

Over in Duval County National Oil Co. has its No. 2 Ball standing at a little below 4,000 feet with a bull-plug in the top. Back of the drilling of No. 2 was a showing of oil and gas in sand at about that depth and further geology disclosed in the No. 2 is leading to its being deepened. It may be one of the deepest holes drilled in the Gulf Coast area.

Daily average production in the week ending May 3:

Branyon	21
Bruner	19,930
Buchanan	169
Dale	347
Darst Creek	17,385
Kingsville	130
Larremore	28
Luling	9,494
Lytton Springs	822
Manford	600
McMullen County	35
Medina County	22
Mirando	10,102
Pettus	984
Somerset	1,542
Taylor	370
Yoast	515
Total	62,136
Week ending April 26	64,059
Decrease	1,623

COMPLETIONS

Jennings Pool—Zapata County

Killam-Duggan's No. 15-C Cuellar, 807 feet east of northwest corner, south 200 feet north line of Survey 248; total depth 1,563 feet; set 6⅝-inch casing at 1,551 feet; sand 1,553-63 feet; estimated 300 bbls.

Kohler Pool—Duval County

Humble Oil & Refining Co.'s No. 44 Kohler, 495 feet north line, 495 feet east line of Survey 424; total depth 1,817 feet; sand 1,804-17 feet; set 6⅝-inch casing at 1,804 feet; estimated 10 bbls.

Driscoll Field—Duval County

Robert Driscoll's No. 11 Robert Driscoll, 560 feet east line, 1,050 feet south line, Survey 448; total depth 2,890 feet (corrected depth); sand 2,884-90 feet flowed oil through drill stem test; flowing 700 bbls. 22 gravity, small gas pressure.

Darst Creek—Guadalupe County

Humble Oil & Refining Co.'s No. 5 D. D. Baker, 150 feet from north line, 150 feet from east line of tract, in the J. C. Darst Survey; total depth 2,598 feet; completed. Same company's No. 13 Denman, 2,900 feet from southeast corner, 150 feet from northeast line of survey, 1,200 feet southwest of Empire's No. 2 Knoblock, in the A. S. Emmett Survey; total depth 2,600 feet; swabbing 700 bbls. per day.

Magnolia Petroleum Co.'s No. 2 Richburg, 450 feet from west line, 150 feet from south line of 102-acre tract, in the east corner of the J. R. Robinson Survey; total depth 2,537 feet; pumping 200 bbls. per day; serpentine well.

Pettus Area—Bee County

Humble Oil & Refining Co.'s No. 2 J. J. McKinney, 600 feet south of No. 1 McKinney, 150 feet east of west line of Randolph Survey in the Randolph Survey; total depth 3,956 feet; 550 bbls. initial on five-sixteenths inch choke, 600 pounds working pressure.

Union Production Co.'s No. 7 George Ray, 450 feet northwest of No. 1 McKinney discovery in the Kerr Survey; total depth 3,943 feet; 525 bbls. first 24 hours and 624 bbls. second 24 hours on three-sixteenths inch choke, 600 pounds working pressure.

ABANDONED TESTS

Darst Creek—Guadalupe County

Humble Oil & Refining Co.'s No. 1 Sally Wilson, 150 feet from north line, 183 feet from west line, in the J. C. Darst Survey; location abandoned. Same company's No. 1 Yates Wilson, 150 feet from north and west lines of tract, in the Jacob Darst Survey; location abandoned.

Magnolia Petroleum Co.'s No. 1 Fannie Nixon, 1,650 feet east-west line, 150 feet south-north line of 200-acre tract, in the L. W. Alexander Survey, 1½ miles southeast from Darst Creek; total depth 3,020 feet; dry, abandoned.

NEW LOCATIONS

Cole Pool—Webb County

South Texas Production Co.'s No. 1 S. Benavides, 200 feet northwest line, 150 feet southwest line, Myrtle E. Hale Subdivision, Block 18, Mariano Arispe grant; derrick.

Jennings Pool—Zapata County

John J. O'Hern's No. 1 Gracia, 150 feet southeast line, 150 feet northeast line, Share 3, Fansler Partition, Comitas grant; derrick.

W. R. Shankle's No. 1 Cuellar, 61 feet northwest line, 200 feet southwest line, Block 15, Survey 65; rigging up.

Bruner Pool—Caldwell County

Humble Oil & Refining Co.'s No. 3 New, 150 feet from north line, 1,838 feet from west line of tract, in the J. Hinds Survey; derrick.

Buchanan Pool—Caldwell County

Buchanan-Danciger's No. 2-A W. T. Cude, 150 feet from east and north line of 136-acre tract, in the William Spillers Survey; rigging up.

Darst Creek—Guadalupe County

Abercrombie Drilling Co.'s No. 2 Dix-McKean, 150 feet from north line, 150 feet from west line of 20-acre tract, in the J. R. Robinson Survey; total depth 1,900 feet; drilling in shale.

Gulf Production Co.'s No. 2-A Dix-McKean, 150 feet from southeast and southwest lines of 20-acre tract, in the J. R. Robinson Survey; total depth 2,240 feet; drilling in marl.

Humble Oil & Refining Co.'s No. 13 Denman, 2,900 feet from southeast corner, 150 feet from northeast line of survey, 1,200 feet southwest of Empire's No. 2 Knoblock, in the A. S. Emmett Survey; total depth 2,600 feet; swabbing 700 bbls. Same company's No. 6 Sallie Wilson, 150 feet from south line, 172 feet from west line of tract, in the J. C. Darst Survey; total depth 2,624 feet; set 6⅝-inch casing. Same company's No. 5 Yates Wilson, 450 feet from south line, 172 feet from east line of tract, in the J. C. Darst Survey; total depth 2,380 feet; drilling in chalk.

Louisiana Oil Refining Co.'s No. 5 Thomas Dix, 500 feet from south line, 150 feet from east line of 50-acre tract, in the J. R. Robinson Survey; total depth 1,300 feet; drilling in shale.

DRILLING ACTIVITY

Darst Creek—Guadalupe County

Empire Gas & Fuel Co.'s No. 5 Dowdy, 792 feet from north line, 150 feet from east line of tract, in the J. C Darst Survey; derrick. Same company's No. 2 Knoblock, 600 feet south line, 150 feet east line of 40-acre tract, in the J. R. Robinson Survey; total depth 2,400 feet; drilling in marl.

Humble Oil & Refining Co.'s No. 4 Sally Wilson, 500 feet east of No. 2, 150 feet north line of tract, in the Jacob Darst Survey; derrick.

Magnolia Petroleum Co.'s No. 2 Appling, offset to No. 1 Appling on southwest, east end of field, in the James Hodges Survey; total depth 2,475 feet; setting casing. Same company's No. 3-A M. E. Roamel, 450 feet north-south line, 150 feet west-east line of tract, in the J. R. Robinson Survey; total depth 2,862 feet; sulphur water; shut down.

Sun Oil Co.'s No. 7 Knoblock, 1,366 feet from southwest line, 150 feet from northwest line of tract, in the J. W. Robinson Survey; derrick. Same company's No. 2 Manford, 150 feet from southwest line of tract, 300 feet southeast of No. 1 well, approximately 600 feet east of Penn Oil Co.'s Manford producer, in the J. Hodges Survey; total depth 2,372 feet; coring in marl.

The Texas Company's No. 7 Dallas Wilson, 150 feet south and east lines of 40-acre tract, in the J. C. Darst Survey; location.

Trigg and others' No. 1 Fred Warren, approximately 3,000 feet southwest of Magnolia's No. 1 Nixon, in the northeast corner of the John H. Burnham Survey, 1½ miles southeast from Darst Creek; total depth 1,420 feet; drilling in shale.

Dobrowolski—Bexar County

Penn-Tex Oil Co.'s No. 1 Dobrowolski, 450 feet from south line, 150 feet from east line, west 67 acres of 147-acre tract, in the M. Menchaca Survey, 5 miles southeast from San Antonio; total depth 600 feet; drill stuck.

Bruner Pool—Caldwell County

Humble Oil & Refining Co.'s No. 5 T. Briscoe, 1,050 feet from west line, 150 feet from north line of 56-acre tract, in the J. Hinds Survey; location.

Buchanan Pool—Caldwell County

Danciger Oil & Refining Co.'s No. 4 Dale School, location.

Pettus Area—Bee County

Union Production Co.'s No. 8 George Ray, 350 feet due west of Humble's No. 2 McKinney, in the Kerr Survey; total depth 3,869 feet; sand 3,864-69 feet; set screen.

Lasater Pool—Brooks County

Houston Oil Co.'s No. 1 Holbein-Wormser, 330 feet north line, 6,540 feet east line, direct offset 660 feet south of No. 1 Lasater; total depth 5,955 feet; drilling in gumbo.

Cartwright Pool—Live Oak County

Houston Oil Co.'s No. 1 A. Boothe, 3,000 feet from west line, 300 feet south line, in the M. B. Kilvin Survey; total depth 2,125 feet; drilling in hard packed sand.

Agua Dulce Pool—Nueces County

Houston Oil Co. of Texas' No. 1 M. E. Brooks, 330 feet from north and east lines of fractional Section 29, Benton Pasture Subdivision, Los Sauces grant; total depth 1,184 feet; fishing for stuck drill stem.

Nursery Pool—Victoria County

Humble Oil & Refining Co.'s No. 3-A Jay J. Welder, 1,634 feet southeast line, 736 feet southwest line, in the D.L.&C. Survey; total depth 6,417 feet; drilling in sticky gumbo.

Cole Pool—Duval County

F. S. Bain-Miller I. Shaw's No. 1 S. Benavides, 1,950 feet west line, 180 feet north line, Survey 173; total depth 556 feet; drilling.

Wilkins Seacord's No. 1 S. Benavides, 660 feet northwest line, 150 feet northeast line, Block 8, Survey 174; derrick.

Cole Petroleum Co.'s No. 68 Rosa Benavides, 660 feet northeast line, 660 feet northwest line, Cole Subdivision, Mariano Arispe grant, Block 11, Survey 14; total depth 3,666 feet; whipstocking out.

Kohler Pool—Duval County

Simms Oil Co.'s No. 9 Dinn, 660 feet east line, 660 feet south line of NW SE of Survey 143; rigged up; standing.

Humble Oil & Refining Co.'s No. 41 Kohler, 2,970 feet south line, 330 feet east line, Survey 165; location

Schoolfield-O'Byrne—Duval County

Magnolia Petroleum Co.'s No. 1 Hahi-Strip, 3,890 feet east line, 600 feet south line, Survey 61; total depth 2,298 feet; sand; set 6⅝-inch casing.

Roma Pool—Starr County

The Texas Company's No. 1-B V. C. de Guerra, 150 feet south line, 150 feet west line of north 1,173 acres, Share 92, Porcion 68 of Partition Porcion 67-68-69-70-71-72, Jurisdiction of Mier; total depth 3,500 feet; fishing; preparing to sidetrack bit.

Aviator Pool—Webb County

O. W. Killam's No. 1-V A. M. Bruni, 178 feet east line, 1,180 feet north line, Block 22, Brown Subdivision, Albercas grant; total depth 2,287 feet; reaming.

Carolina-Texas—Webb County

E. D. Claggett and Sam Evans' No. 1 Webster, 150 feet south line, 990 feet west line, Survey 684; total depth 24 feet; standing.

W. R. Shankle's No. 2 Webster, 1,170 feet west line, 150 feet south line, Survey 684; riging up.

Cole Pool—Webb County

French Oil Corp.'s No. 1 Rosa Benavides, 150 feet north line, 150 feet west line, Survey 659; total depth 200 feet; drilling; set 10-inch casing at 40 feet.

Morris Drilling Co.'s No. 2 S. Benavides, 289 feet northwest line, 150 feet northeast line, Myrtle E. Hale Subdivision, Block 431, Mariano Arispe grant; total depth 1,784 feet; preparing to drill deeper from 1,784 feet.

O. W. Killam's No. 18 Bruni; total depth 3,588 feet; drilling; sand 3,435-5[illegible] feet; top showed oil, bottom salt water.

E. H. Buckner's No. 1-A Rosa Benavides, 660 feet northwest line, 660 feet northeast line, Cole Petroleum Co. Subdivision, Mariano Arispe grant, Block 5, Survey 14; total depth 1,613 feet; resumed drilling.

Magnolia Petroleum Co.'s No. 2 King-Harper, 660 feet north and east lines Block 2, Survey 323; location.

Charco Redondo Pool—Zapata County

Mid-West Public Utilities' No. 1 Gazba, 450 feet southwest line, 450 feet southeast line of M. P. de Garza tract in the Pedernal grant; total depth 500 feet; drilling.

W. R. Duke's No. 2 J. M. Martinez 415 feet southwest line, 500 feet northwest line, Duke Subdivision, Block 22, Charco Redondo grant; total depth 90[illegible] feet; coring.

C. R. Moore and J. M. Moore's No. 1 Adela G. de Flores, 330 feet northwest line, 330 feet northeast line, E. M. Doty Oil & Gas Subdivision, Block 99, Charco Redondo grant; location.

Jennings Pool—Zapata County

A. L. Edgington's No. 3 Trevino, 790 feet east line, 150 feet south line, Block 26, Survey 412; total depth 1,233 feet; set 6⅝-inch casing at 1,215 feet; sand 1,215-33 feet.

May & Holder and Alamo Drilling & Leasing Co.'s No. 2 Cuellar, 450 feet northeast line, 150 feet northwest line of May & Holder 80-acre tract, Cuellar tract in the Cerrito Blanco grant; derrick.

O. W. Killam's No. 17 Cuellar, 4,42[illegible] feet northwest line, 1,942 feet northeast line, Cerrito Blanco grant; total depth 1,335 feet; drilling. O. W. Killam's No. 21 Cuellar, 450 feet northeast line, 4,58[illegible] feet northwest line, Cerrito Blanco grant; total depth 2,145 feet; drilling sand 1,914-19 feet, tested salt water.

H. Muckleroy's No. 3 Trevino, 460 feet south line, 300 feet east line, Block 25, Survey 412; rigging up to drill deeper from 1,281 feet.

Magnolia Petroleum Co.'s No. 3 Cuellar, 150 feet to northeast and southeast lines, Survey 245; total depth 3,200 feet; drilling in sticky shale.

South Texas Production Co.'s No. 1 Measles and others, 3,830 feet southeast line, 660 feet northeast line, Cerrito Blanco grant; total depth 1,756 feet; drilling.

Livingston & Twiss' No. 1 Trevino, 15[illegible] feet north line, 150 feet west line, Block 7, Survey 66; total depth 1,250 feet; drilling.

F. M. Blair and F. M. Blair, Jr.'s No. 3 Trevino, 500 feet east line, 150 feet north line, Block 1, Survey 66; location.

R. F. Blankenship's No. 2 Garza, 42[illegible] feet west line, 425 feet north line, Block 2, Survey 413; total depth 1,630 feet; drilling.

G. F. Owen's No. 2 Montemayor, Block 7, Survey 64; total depth 700 feet; drilling.

DEATH OF C. A. BARLOW

C. A. Barlow, scout in the Seminole district for the Carter Oil Co., died in a hospital in Shawnee, Okla., on April 30 following an operation. He is survived by Mrs. Barlow and two children. The funeral was held Saturday in Shawnee and was attended by many members of the Mid-Continent Oil Scouts and Land Men's Association, of which he was a valued member. Deceased was an overseas veteran of the World War and bore the rank of captain in the Officers Reserve Corps. He was given a military funeral under the auspices of the American Legion.

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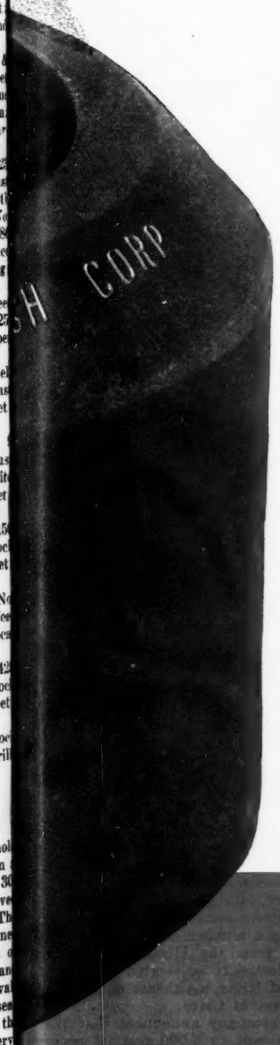

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Protectors

MICHIGAN FIELDS

(Continued from Page 81)

feet deep and was shot from 2,039-43 feet with little results.

The Blue Arrow Petroleum Co.'s No. 2 Kooi well, NW SE, Section 8-10-16, Muskegon Township, also on the river flats, is drilling at about 1,600 feet, or just above the upper Traverse formation, after setting casing at 1,559 feet. Traverse limestone was topped at 1,545 feet.

Two other wells on new locations not previously drilled are not yet deep enough for production. One is the Lima Oil Corp.'s No. 7 Louis P. Haight, SW SW, Section 9-10-16, Muskegon Township, on the river flats, and the other is Ruby A. Edwards' No. 1 Timmer, SW NE, Section 7-10-16, near the North Muskegon city limits in a territory not previously tested thoroughly for oil.

The Lake Shore Petroleum and Citizens Petroleum Co.'s No. 1 Charles Reeths, or Smith well, NE SE, Section 8-10-16, Muskegon Township, on the river flats, is drilling between 1,700 and 1,800 feet on a deepening job from an original upper Traverse oil well.

The Muskegon Oil Corp. has one new location and one deepening job on the river flats which will be started next month but are now idle.

This constitutes a complete review of the Muskegon oil field with the exception of the Reed Oil Co.'s No. 2 Albert Heinz, NW SE, Section 8-10-16, Muskegon Township, on the river flats. Casing is being pulled from this well to make it a deep test. Indications now are that the casing will be successfully pulled and an underreamer removed from the hole, which is 2,140 feet deep.

It is planned to set 8-inch casing at the bottom of the hole and then go on to lower formations, although no definite announcement has been made.

Wildcat Dry

The North American Trust Co.'s No. 2 Iroquois Oil Co. well near Fruitvale has been abandoned at about 2,300 feet, dry in the Dundee. It is in NE NW, Section 12-13n-17w, Grant Township, Oceana County.

Two Van Buren County wildcats in southwestern Michigan have been plugged and abandoned. Gibson-Johnson-Dixie's No. 1 Krocke, SE NW, Section 23-1s-16w, Geneva Township, and the Wolverine Oil & Exploration Co.'s No. 3 Vought, SE NE, Section 32-4s-14w, Decatur Township.

Witt & Wyant's No. 5 Alfred Fenner, NW SW, Section 11-10-17, Laketon Township, finally has been cased at 2,040 feet and will be drilled into the Dundee within a few days. It was deepened from an original upper Traverse oil producer and its completion has been delayed for several weeks by a bad fishing job.

The Eureka Gas & Oil Co.'s No. 1 Fred A. Kadus, on a tract of 3½ acres adjoining the National Petroleum-Kadus lease, is drilling in the upper Traverse as the only other active well in Laketon Township at the present time. Several are shut down and uncompleted.

There were no completions in the Mount Pleasant Field. Two new locations have been made by the Pure Oil Co.: No. 6-B State-Isabella, NW SE, Section 2-14n-3w, Chippewa Township, Isabella County, and No. 1 Sawade, NW SW, Section 2-14n-3w, also in Chippewa Township.

Clare County

A show of oil was struck in the upper Traverse in James A. McKay and J. A. Mercier's No. 3 Citizens State Bank well, located SE SE, Section 21-18n-4w, Hatton Township, Clare County. The show was struck at 3,238 feet and the well is to be continued to the Dundee.

Drilling was resumed on the Clare Development Syndicate's No. 1 Mary Hubel, SW SW, Section 27-17n-4w, Grant Township, Clare County, near the village of Clare. The well was about 1,650 feet deep when drilling was resumed by the Oil Well Engineers, Muskegon contractors.

Work also has been started on the Peninsular Oil Co.'s No. 1 Bowler, SW NW, Section 15-17n-4w.

Three new locations for wildcats were made fairly well scattered throughout the State with one in Shiawassee Township, Shiawassee County, another in Dundee Township, Monroe County, and the third in Putnam Township, Livingston County.

The first is O. L. Barnebey's No. 1 Galloway, NW NE, Section 11-6n-3e, Shiawassee Township. The second is M. J. Morris, trustee's No. 1 Reau, SE SW, Section 18-6s-6e, Dundee Township, near several other small producers in Monroe County. The third is the Glennbrook Oil Co.'s No. 1 Glen, SW SW, Section 32-1n-4e, in Putnam Township, Livingston County.

Acreage Sale

Bids on only 800 of a total of 7,053 acres of state land offered for lease were received at a state auction on April 28 at Lansing, Mich. Three parcels were leased at an average of 22 cents an acre as follows: 480 acres in Midland County to Charles Strange at $120; 120 acres in Mason and Lake Counties to Arthur Adamy of Reed City, Mich., for $30, and 200 acres in Mason County to M. Kienholz of Scottville, Mich., for $25.

Land in Mason, Lake, Kalkaska, Clare, Midland and Newaygo Counties was offered. Previous state lease sales have averaged 50 cents.

The Kalkasa County wildcat of the Muskegon Oil Corp., the Grayling Development Co. and the Dixie Oil Co. is being plugged after being completed dry in the Dundee formation at a total depth of 2,785 feet. The well is located NW NW, Section 16-26n-5w, Clearwater Township, Kalkaska County.

Drilling equipment has arrived for continuation of the wildcat drilled to a depth of 3,300 feet last fall by the Whittmer Oil & Gas Properties of Pittsburgh, Pa., near the village of Bellevue in south central Michigan. The well is on property of the Alpha Portland Cement Co. R. R. Brant of Hagerstown, Ind., will be in charge of operations.

LA.-ARK. FIELDS

(Continued from Page 73)

miles north of Greenwood gas territory on the Texs line and set a short string of 6-inch at 2,090 feet for a test.

Arkansas-Louisiana Pipe Line Co. made a completion of No. 1 Johnson, Section 7-11-13, DeSoto Parish, 8 miles southwest of Mansfield on the edge of the old Spider district. This well, begun by Benedum & Trees Oil Co., and finished by Loring Oil Co. (the same organization which later on deepened it when salt water got troublesome), was taken over by the Arkansas-Louisiana Pipe Line Co. with the 3,500 acres on which it is located, while deepening. Last week it staged a blowout and caught fire, singeing the crew, and was completed at 3,054 feet as a 3,000,000-foot producer. Arkansas Fuel Oil Co.'s No. 1 Scott, Section 32-14-13, offsetting Roy's Holly producer on the north, had 500 feet of salt water in the hole from 2,989 feet and is drilling shale at 3,098 feet. Two previous drill stem tests were dry. Disappointing as this well has turned out to be, Roy has made locations for No. 1 Mattie Fuller and No. 1-A Parker, both in Section 5-13-13, in which his discovery well is located. He now has seven operations under way and the district as a whole has 10, with four or five wildcats from 3 to 6 miles or more away from the producer.

Arkansas Fuel Oil Co.'s deep test in Urania, No. 5-F Urania, a Tullos Townsite well in Section 24-10-1e, LaSalle Parish, is drilling at 6,171 feet. It is the deepest hole ever drilled in northeastern Louisiana and had 1,200 feet of salt water in 4 minutes on a drill stem test of 12 feet of sand at 5,923-35 feet. Gulf States Gas Co. abandoned No. 1 Urania, Section 1-10-1e, as a salt water hole at 1,000 feet. Franklin Oil & Gas Co.'s No. 1 O'Brien, Section 17-15-9, was a dry hole and abandoned. A. C. Glassell made location for the first of three wells he and associates are obligated to drill on a block of 100,000 acres in Concordia, Catahoula and Tensas Parishes, previously erroneously described as located north of Marksville, Avoyelles Parish, in Avoyelles, Concordia and LaSalle Parishes. It is in Section 41-8-10, Concordia Parish on the Pittsfield plantation and almost within sight of the Mississippi River. Rig is up but whether it is to drill to 4,000 feet, to which depth one of the three is required to go, has not been reported.

More Big Gassers

Four wells in Richland, three of them in the southern part of the field, added 106,000,000 feet to the fields open flow capacity. Louisiana Gas & Fuel Co.'s No. 2-C F. B. Sartor, Section 20-16-6, made 18,000,000 feet, total depth 2,450 feet. Richland Operating Co.'s No. 2 Traylor, Section 25-16-6, made 31,000,000 feet from 2,450 feet and Southern Carbon Co.'s No. 2 Mulhern, Section 19-16-6, gauged 7,790,000 feet, total depth 2,456 feet. United Carbon Co.'s No. 1 Hallock in Section 2-16-16, made an estimated 49,000,000 feet, total depth 2,445 feet.

Zwolle's Activities

Zwolle could show for the week's activities Loring Oil Co.'s No. 6 Bowman-Hicks in Section 33-8-12, flowing 425 bbls., total depth 2,530 feet; A. H. Tarver and others' No. 1 Sabine State Bank, Section 27-8-12, 7 bbls., total depth 2,680 feet, and two dry holes. These were Air Lift Oil Co. and Root Refineries, Inc.'s No. 1 Leone, Section 32-8-12, abandoned at 2,600 feet and Burnham and others' No. 1 Bolin, Section 31-8-12, abandoned at 2,436 feet. Tarver's well is a half mile east of Haynes Brothers' No. 1 Dover, Section 28-8-12, abandoned at 2,800 feet after a good show at 2,640-70 feet.

With 2,000 feet of oil in the hole Loring Oil Co.'s No. 7 Bowman-Hicks in Section 4-7-12, a south offset to Ohio Oil Co.'s No. 2 Bowman-Hicks in Section 33-8-12, is the deepest producer in the district so far. It is at 2,700 feet, and is running tubing. The company has two deep tests under way, No. 5 Bowman-Hicks in Section 34-8-12, about two locations west of the discovery well, and No. 1 Peavy-Wilson Lumber Co., a wildcat in Section 21-6-13, 10 miles southeast of production in the Blue Lake end of the Zwolle district. Both are to go 6,000 feet if necessary and the former is drilling at 2,917 feet and the latter set 150 feet of 15½-inch surface pipe. Loring Oil Co.'s No. 1-A Bowman-Hicks, the discovery well, went dead for the second time early in the week and is still off production. No. 3 Bowman-Hicks in the same section also is dead.

No. 1 Louisiana Long Leaf Lumber Co. in Section 4-7-11, 4 miles east of production, is awaiting standard rig with 150 to 200 feet of oil in the hole from 2,425 feet. Pelican Natural Gas Co.'s No. 1 Sabine Lumber Co. in Section 1-7-12, a half mile south and 1½ miles east of nearest production had a show of oil at 2,580 feet and is waiting orders. Houston interests operating as Teteco Oil Corp. has rig up for No. 1 Louisiana Long Leaf Lumber Co. in Section 18-6-12, 12 miles southeast of production.

Merritt & Merritt abandoned No. 1 Boucher, Section 17-23-11, Sarepta district of Webster Parish, was dry and abandoned at 3,200 feet. The first well to be drilled by Triangle Drilling Co. in the Sugar Creek district of Claiborne Parish since the completion of No. 1 Kilpatrick, Section 7-19-5, as a 1,000,000-foot gasser with 10 to 15 bbls. of oil at 4,558 feet, will be No. 1 Caskey in Section 6-19-5, for which a rig is up. It, also, will be a deep test. The Kilpatrick well was scheduled to go 7,000 feet and the Caskey probably likewise, unless it finds production at or near the former's level.

Four Union County Failures

Arkansas' four completions all were Union County failures. One in El Dorado and the others wildcats. Rice and others' No. 1 Ralty in Section 7-17-15, El Dorado, was abandoned with surface casing set at 92 feet last July since when it has been shut down. Al-Cal Oil Co.'s No. 1 Haney, Section 1-17-16, between El Dorado and Lisbon, was dry at 2,770 feet. W. M. Coats and Lion Oil & Refining Co.'s No. 1 McDuffie, Section 32-19-17, at Junction City, was abandoned at 4,506 feet and Coats has rig up for No. 1 Collins in Section 28-9-10, Natchitoches Parish. Location is in the Townsite of Marthaville around which there was much leasing activity as a sequel to the Zwolle discovery well. Johnson-Gummer Co. abandoned No. 1 Cargile, Section 4-18-13, at 3,825 feet on account of salt water. This location is within a mile northwest of Urbana production and between 200 and 300 feet deeper than Urbana's two producers. Marine Oil Co.'s No. 2-B Winn, Section 10-18-13, reported last week as a completion making 500 bbls. of oil and 5,000 bbls. of salt water from 3,544 feet, cored 12 feet farther through sandy shale and sand without improving any and was abandoned as a salt water hole. J. W. Olvey, drilling No. 1 G. C. Simmons, Section 15-18-13, tested five joints of mud and oil at 2,228-80 feet, salt water at 2,483-2,515 feet and is drilling at 2,724 feet. Lion Oil & Refining Co. cored red beds at 4,165 feet on No. 1 Ballard, Section 10-18-13. Magnolia Petroleum Co.'s deep test in Champagnolle, No. 1 Alice Gregory, Section 15-17-14, cored sandy shale at 3,587 feet.

Panola County, Texas, gas field had one completion, Doris Thomason's No. 6 Trosper in the Jane Thorpe Survey, making 500,000 feet from 2,385 feet. W. G. Banks and H. C. Cate have taken two blocks of 10,000 acres each south and southwest of Carthage in the southern and southwestern portions of Panola County, and G. S. Lyles is completing a 7,000-acre block in the same locality. All were secured for a 3,000-foot well on each block drilling to start in 90 days.

BIRMINGHAM UNIVERSITY HAS MODEL OIL FIELD

A borehole of 1,109 feet has been completed in the model oil field at the Birmingham University at Edgbaston, England, says the Petroleum Times of London. The borehole, which is 10 inches in diameter and lined with steel tubing to 707 feet, was drilled by the students of the oil engineering department, under the supervision of L. P. Timmins, senior lecturer in oil engineering at the university, and formed part of the practical course in that department. The drilling rig used was a standard pattern cable percussion, one of American design and manufacture, such as is used in the oil fields throughout the world. Geologically, the borehole is of more than passing interest as, after drilling through the drift and bunter sandstone, the breccia (enville beds) was encountered at 728 feet, and continues to the present depth, a thickness which was not expected. Water rose to within 30 feet of the surface, and would, incidentally, provide a cheap and plentiful supply for the university laboratories. A second borehole, which has reached a depth of 517 feet, is being drilled by means of a mud flush rotary rig, which is the latest system of drilling in the oil fields.

DEEP TEST LOCATION

WICHITA FALLS, Tex., May 5.—The Deep Well Development Co., organized by North Texas operators for the purpose of testing the deeper levels in the North Texas field announces that its first test will be drilled 300 feet west and 841 feet north from the southeast corner of the original Murchison Pigg and others' lease of 164 acres, which is the south 164 acres of the north 238 acres of Section 834, D. Cowan Survey, Abstract 43, Wichita County. This lease is now owned by the Tucker Oil Co. and has a number of oil wells on it producing from the Hirshi sand, at about 1,800 feet. It is located just south of the Red River, northeast of Electra and northwest of Clara.

The company announces that the test will be sent to 6,000 feet, if necessary, and no less than 3,000 feet and that operations will commence as soon as titles to various leases are approved.

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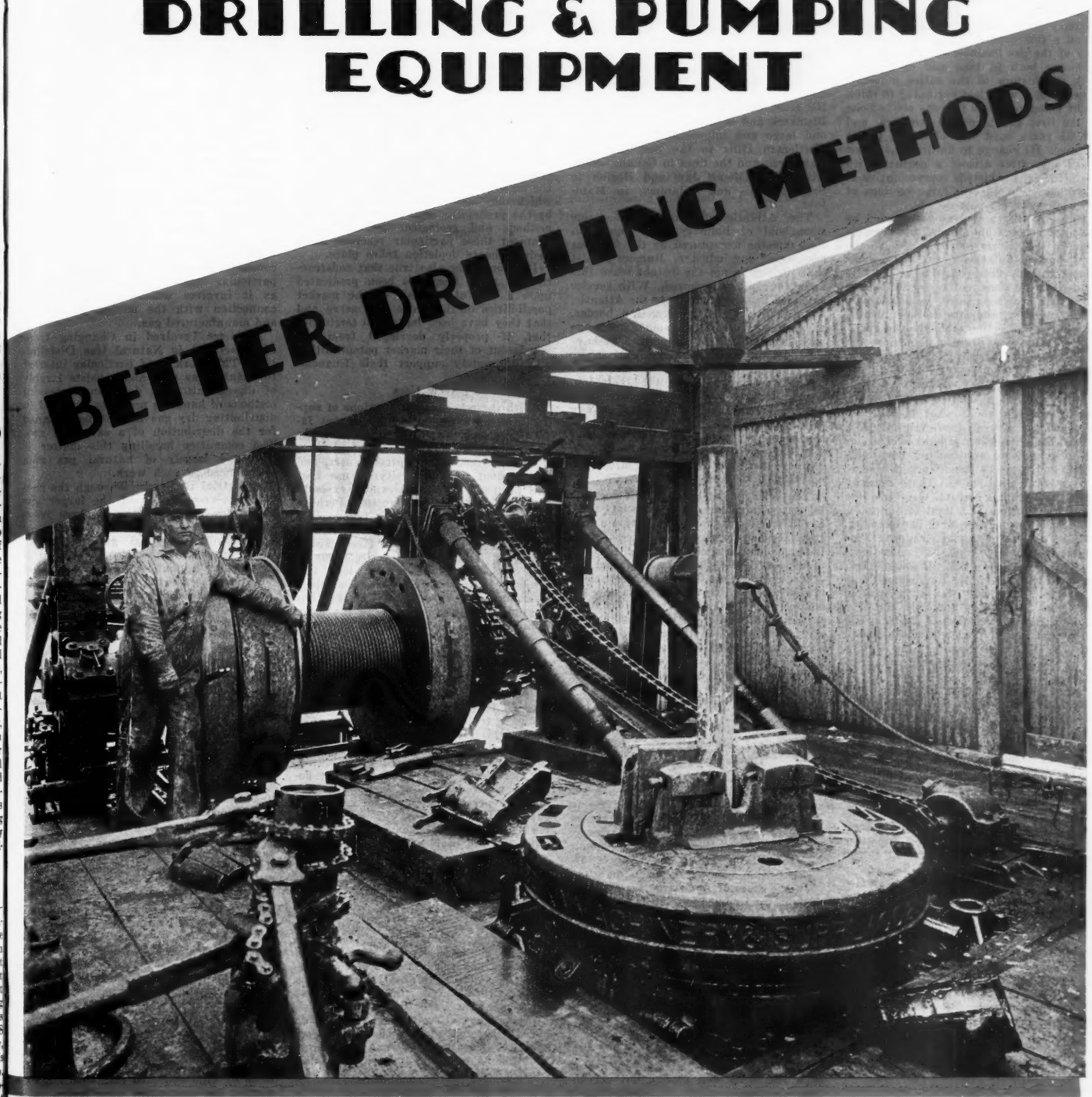

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Gas Industry Expansion Reviewed

Chairman H. C. Morris of Natural Gas Department A.G.A. Discusses Present Development at New Orleans Meeting

By Henry C. Morris
Chairman, Natural Gas Department, American Gas Association*

Here in this interesting city of historic romance and modern commerce, we are not unmindful of the compliment which New Orleans has paid to the natural gas industry by inviting this association to spend a few days as its guest. The history of the gas business in this city synchronizes both in time and in progress with the history of the entire industry. When people were just beginning to think about using gas, New Orleans erected one of the first gas plants in America, and for 93 years used this oldest of public utilities. Its change to natural gas a few years ago, after almost a century with the artificial product, is representative of what has occurred over large sections of our country in the past decade.

Here we find ourselves surrounded by the most remarkable natural gas development in the history of the world. In the Southwest manufactured gas plants have almost entirely disappeared; the markets comparatively close to the gas fields long since have been taken over by our branch of the industry, and now we see pushing out in every direction from the centers of supply long gas lines whose size and length were unthought of 10 or even 5 years ago.

Pipe Line Expansion

What has happened in Louisiana is very representative of what is going on all over the natural gas territory. In a single year's time four pipe lines of major proportions were constructed from this State, and three of these lines will serve consumers in nine states. These lines include the Memphis Natural Gas Co.'s line from the Monroe, La., field to Memphis, Tenn., which was completed in December, 1928. The next was the Arkansas Pipe Line Co.'s 20-inch line, 125 miles long, from the Monroe and Richland, La., fields to a point on the Louisiana-Texas boundary. This line was completed in November, 1929. The next was the Mississippi River Fuel Corp.'s 22-inch line to the St. Louis district, and the fourth was the Southern Natural Gas Corp.'s 20-inch line to Birmingham, Ala., and Atlanta, Ga.

Among the important cities to which natural gas has been carried or soon will be carried are Chicago, San Francisco, Salt Lake City, St. Louis, Atlanta, Birmingham, Council Bluffs, Iowa, Lincoln, Neb., and a score or more of other cities in the Middle West. For the first time a long distance line crossed the Mexican border when the United Gas Co. laid a 12-inch line, 143 miles long, from fields near Laredo, Tex., to Monterrey, Mexico. The Arkansas-Louisiana Pipe Line Co. constructed 136 miles of 8 and 6-inch from Oil City, La., to serve 12 towns in northeastern Texas. The Lone Star Gas Co. built a 125-mile line of 20-inch pipe from Petrolia, Tex., to Fort Worth and Dallas, Tex. Magnolia Gas Co. started construction of a 230-mile line from Webb County, Texas, to San Antonio. The El Paso Natural Gas Co. constructed approximately 200 miles of line from Lea County, New Mexico, to El Paso, Tex. The Western Public Service Corp. constructed about 345 miles of gathering, transporting and distributing lines to serve 13 cities in Utah, including Salt Lake City and Ogden, and several communities in southwestern Wyoming. The Pacific Gas & Electric Co. constructed 328 miles of line from the Kettleman Hills area in California to San Francisco and other California cities.

Projects for 1930

Among the more important lines projected for 1930 are the 900-mile line from the Texas Panhandle to Chicago; a line of about the same length from the Panhandle to Lincoln, Neb., Council Bluffs, Iowa, and a dozen other cities in these two States; the line which will carry natural gas to Albuquerque, N. Mex.; a line to Greely, Colo.; one from the Wyoming gas fields to Buffalo and Sheridan, Wyo.; extensions of the lines from the Turner Valley Field in Canada to the Big Horn Basin in Wyoming, and lines to Bismarck and Williston, N. Dak.; a second large and important line from the Kettleman Hills to the San Francisco Bay area; and the lines in Canada which will supply Moose Jaw and Regina in Saskatchewan and Winnipeg in Manitoba.

The Atlantic seaboard is the sole stronghold of industry and population that remains uncaptured by the vigorous advance of our industry. Rumors persist that the day is not far distant when this exception will be removed. With service extended from the Pacific to the Atlantic, from the Gulf to the Canadian border, an industry that a few short years ago was purely local in character will have expanded into one truly national in its scope and in its responsibility for service.

That the amount of capital involved in such a program of expansion is tremendous can readily be understood by any one familiar with construction costs. It has been calculated that $100,000,000 of pipe lines has been constructed from one locality—the gas producing areas of northern Louisiana.

The development of large gas reserves in Texas, Louisiana, Oklahoma and California would not, in itself, provide a substantial basis for the construction of long lines no matter how tempting the terminal markets might be were it not for other contributing factors. Among these is the better understanding that now exists between oil and gas operators, conservation officials and the public generally in reference to the economic necessity of mitigating the waste of natural gas in the fields and in the methods of utilization. But despite the progress much remains to be done. In some of the very areas from which several of our largest projects receive their supply, there is still such waste as to shock the conscience of thinking people today.

Discovery of Reserves

The early part of the present decade witnessed the discovery of immense gas reserves in the East, West and South and in many cases there was an almost complete dissipation of these reserves with little or no corresponding economic use. The fallacy that gas reserves are inexhaustible was again made manifest.

In the State of Louisiana, for example, wells in the Caddo Field burned for seven or eight years before they were extinguished, and in the interim a gas line was projected to St. Louis by the Busch and Everett interests but was abandoned because of wasting of the gas reserves.

Deeper drilling is being done today than at any other time in the development of the search for oil and gas. As a result, higher well pressures are encountered and the possibility of reaching new producing horizons is increased, but due to improved methods seldom do we hear of a real deep well getting out of control, creating a crater, or dissipating a field. The improvement of drilling machinery, tools and materials, together with the development in the technique of drilling operations has made this possible. Advancements in the art of manufacture of all material used, from the well to the customer's meter, have all contributed to the possibilities of today.

Despite the existence of waste in particular localities, never has the situation with reference to gas reserves been so satisfactory from the standpoint of those who have invested in natural gas pipe line projects. Not only have large supplies been discovered within fairly compact areas but the ownership or control of these reserves, to a very large extent, has passed into hands whose chief interest lies in their orderly and economical development. This might be contrasted with the hysterical competitive situation that existed only a few years ago.

It is probable that the construction of each of the long lines that we have previously enumerated has been justified by the extent of the developed reserves from which they now receive their supply, and by the probability that improved drilling methods and geological technique will augment these particular reserves when their ultimate depletion takes place.

It is no doubt also true that construction of these lines has been predicated upon a careful analysis of the market possibilities of the areas they serve and that they have been built into territories that, if properly developed from the standpoint of their market potentialities, will adequately support their financial structures.

New Uses

With these important questions of supply and the adequacy of the market favorably answered, there still remains the co-ordinate question of complete saturation of the market for present uses, and development of a diversity of use that will properly utilize the capital expenditures required by these projects. Perhaps the most significant fact in reference to these recent developments is the comparatively large amount of fixed capital necessary for adequate service. This is true not only of the recent long line projects that go directly from a given producing area to a terminal market, but it applies with equal force to the older companies that have developed gradually over a long period.

The day has passed when large deliveries of gas can be made without the assumption of these heavy capital expenditures. What has been said in reference to the fixed capital of these companies is true also in a large measure of a substantial part of their current operating charges. With the exception of the cost of the gas purchased or produced, an increase in the volume of sales develops no corresponding increase in the normal operating charges of a natural gas pipe line company. In an industry that possesses these inherent characteristics the real problem of successful management lies in the development of the maximum utilization of these fixed charges, capital and operating, expressed in terms of maximum sales.

Just as improved geological and drilling methods have contributed to the discovery and development of large reserves; just as the co-operation between producers and the activities of conservation agencies have contributed to a proper utilization of these reserves; so in a somewhat lesser degree the American Gas Association, through its research efforts directed toward the solution of some of the manifold and perplexing problems of operation and utilization, has contributed to the feasibility of long line construction.

Research Efforts

Among the more important research efforts promoted and directed by the A. G. A. which are of utmost importance to the natural gas industry are the following:

Pipe Coatings and Corrosions—The association maintains a research fellow, Dr. Scott Ewing, at the Bureau of Standards, who is devoting his entire time in co-operation with the bureau, the American Petroleum Institute, Pacific Coast Gas Association, and other interested bodies to the very important study of pipe corrosion and particularly for the present year to the various types of coatings available for the prevention of such corrosion.

Pipe Joint Research—The association has employed a competent distribution engineer to direct research activities at the A.G.A. laboratory and at various technical universities. The research proposed is based on discussion and recommendations of distribution engineers at the various distribution conferences, and broadly includes study of the performance, not only of old bell and spigot joints, but all new types of joints so far developed.

Mixed Gas Research—This research, conducted at the A.G.A. laboratory is of particular interest to natural gas men, as it involves utilization problems in connection with the mixing of natural and manufactured gas.

Problems Involved in Changing from Manufactured to Natural Gas Distribution—This work is of particular interest to natural gas men and consists largely of dissemination of data on successful methods of handling problems involved in distributing dry gas in systems designed for the distribution of a saturated gas. The committee handling this matter is composed largely of natural gas men experienced in such work.

Industrial Research—Through the constructive co-operation of the larger gas companies, the association is three years on the way in a five-year program of research in industrial gas utilization, which has resulted in the development of gas-burning appliances serving to increase our business in the field of industry. This fund, administered by a committee of manufactured and natural gas utilization engineers, has accomplished notable results. It has already developed a traveling gas-fired bake oven, a rotary brass melting retort and a hotel broiler which together command the entire heating loads for these purposes for gas in competition with other fuels.

Natural gas men have been co-operating in the development of these broad services. The old Natural Gas Association, through its technical and research section, issued reports on standard meter connections, standard testing for gasoline content, gas distribution and gas utilization. The natural gas department of the American Gas Association has continued the specialized research in natural gas subjects and now has, under its main technical and research committee, subcommittees on gas measurement, pipe line flow and gas well delivery capacities. The work of these committees has already had an important influence on the growth and extension of the natural gas industry and their good work is continuing.

The Natural Gas Conservation Committee and the new Committee on Federal Taxation are dealing with subjects of very great importance to all of us.

Market Saturation

I return now to the question of market saturation previously mentioned. During the past winter, attended in many sections by unprecedented cold weather, numerous gas companies were forced to a further realization of a condition in their business already well known, namely the marked difference between the summer and winter demand of the domestic consumer, otherwise called a very poor load factor. For example, the daily demand of the domestic consumer on the coldest winter day is approximately five times

(Continued on Page 166)

*Before American Gas Association, Natural Gas Convention, New Orleans, La., May 5-8.

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FROM THE ATLANTIC TO THE ROCKY MOUNTAINS

Siphon As Solution of Water Problem

Utilizes Energy in Gas Under Pressure to Do Work of Raising Liquid From the Bottom of a Well to the Surface

By J. H. Dunn
Lone Star Gas Co., Dallas, Tex.*

The occurrence of water in gas wells presents a serious problem to producers in the Mid-Continent Field. It is serious because it has shown such a decided effect upon the ultimate recovery of gas. The problem is made difficult because of the number of operators in the same area, a few of whom force the others to certain methods of operation which are not to the best advantage of the field. In such cases these operators refuse to be alarmed over the water situation until it is too late to exclude it at its source. When the water is not excluded at its source our problem is then to retard as much as possible the influx and to bring to the surface that which occurs in the individual wells.

To retard the influx of water or minimize the quantity that comes into a gas-producing stratum, a back pressure must be maintained on the sand. Therefore, any method of operation that would necessitate the removal of pressure, such as bailing, swabbing, pumping or blowing should be avoided when possible.

The siphon has a broad range of application, and offers the most practical and economical method of removing water from gas wells. Its principle of operation is the utilization of the energy in gas under pressure to do the work of raising liquid from the bottom of a well to the surface. The limiting factors being the amount of energy available to handle the liquid and the amount of energy needed to handle the liquid.

Principle and Theory of Siphon

The principle and theory upon which the operation of a siphon depends, is covered in detail by the Bureau of Mines Technical Paper No. 460. Certain designs and results obtained have been discussed prior to this time in a number of magazine articles. It seems now that the siphon is in fairly general use.

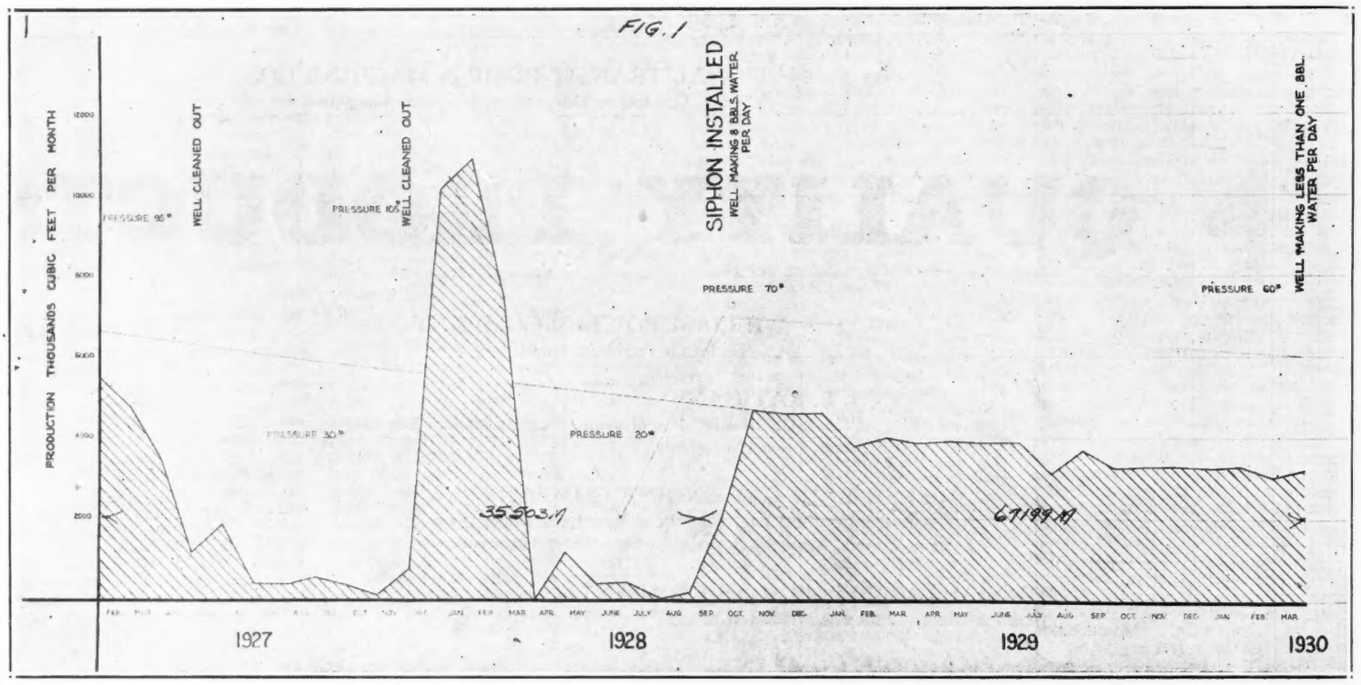
The Lone Star Gas Co. believes that the siphon offers the best method of operation where it is applicable, and is now operating 140 wells with siphons installed. The results are very satisfactory. A number of wells have been reclaimed after they were completely drowned out and their operation continued. The siphon operation of others has prevented an abnormal decline in volumes and pressures. These wells are located in the various fields and present a multitude of individual problems.

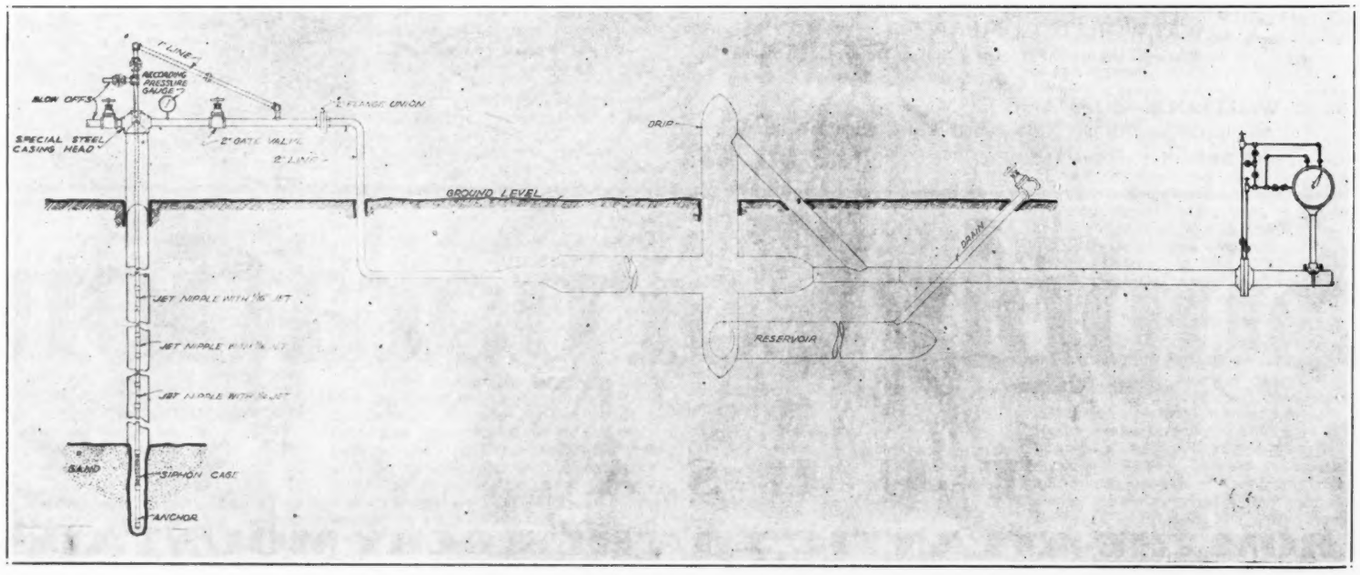
The show the following variation, in depth from 600 to 4,000 feet, in pressure from 25 to 1,450 pounds, in volumes from 100,000 to 20,000,000 feet per day. These siphons are handling from a few gallons to 50 bbls. per day of salt water,

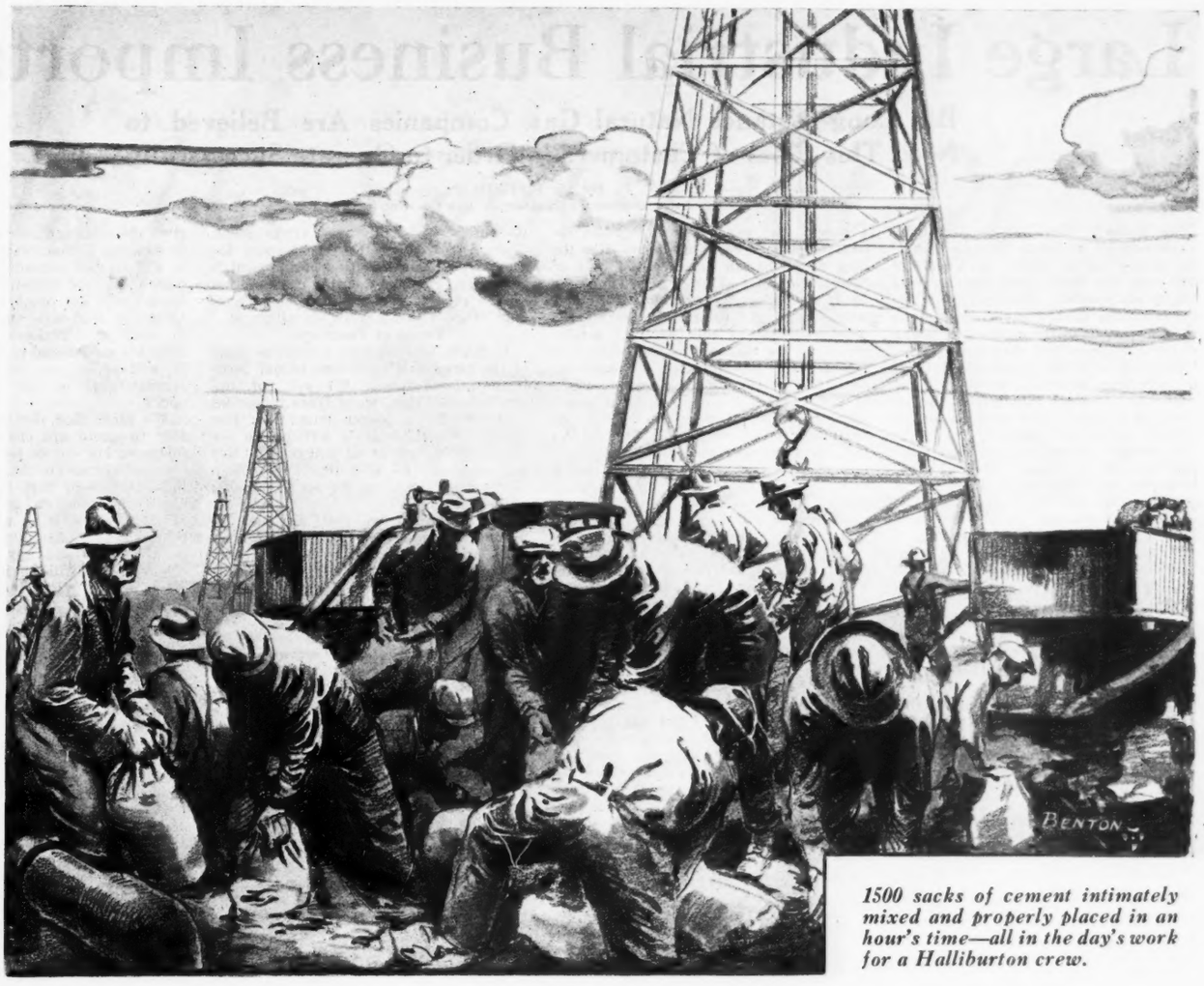
(Continued on Page 232)

*Before May convention, Natural Gas Department A.G.A., New Orleans.

FIG. 1







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Large Industrial Business Important

Big Long-Distance Natural Gas Companies Are Believed to Need This Class of Customers in Order to Operate Successfully

By W. M. Little
Chief Industrial Sales Engineer, Cities Service Gas Co., Bartlesville, Okla.*

This subject, "Development and Load Characteristics of Large Volume Industrial Sales," is as broad as loads are large and one that could be discussed from many angles. However, for the sake of saving time, I shall offer only a few observations of my experience during the last five years and mainly as relates to the policies of an interstate natural gas pipe line company which will no doubt differ to some extent from the activities of a distribution company or an intrastate pipe line company.

We should determine, first, just what constitutes large volume industrial sales. Again, we will differ to a great extent in that respect, for no one may draw an arbitrary line on gas consumption and say that everything above that line is large volume industrial sales, for what would be large to one company might be small to another. For the purpose of discussion in this paper, I will assume that a plant using in excess of 500,000 feet per day should be termed a large volume industrial sale.

The development of this business involves many problems and we might set out rules, regulations and sales talks without end and then see some young industrial salesman go out disregarding all that had been told him and come back with a big fat contract, and that is what counts. In other words, an industrial man must have ability to handle each case individually, for, believe me, he will be dealing with men in executive positions with plenty of ability and it won't take them long to determine whether the industrial man sitting across the table is capable of protecting the interests of the gas company that he represents.

Main Points Set Out

There are certain things that must be accomplished and certain information which one should and must have before he actually gets down to the point of talking contract, and I will attempt to set out briefly what these are.

When a company proposes to construct a pipe line into a certain area, the first thing to know is, "What will the markets be for the gas?" To determine this, a market survey must be made and this survey will include domestic and small industrial business as well as large industrial business. It is not the intent of this paper to say how small industrial and domestic surveys should be made, but we shall deal only with large industrial plants.

It is important that the industrial man, on survey or sales work, be familiar with the fuel situation in general, not only natural gas but coal, oil, wood and other fuels with which his product must compete. We keep available a schedule of freight rates from principal mines to important points along our main line system and these give us a fair knowledge of the cost of coal delivered to industrial plants at different points along our main line. This same information could be compiled by distribution companies easier possibly than by the pipe line company which covers a large territory. The record of fuel oil prices is compiled chiefly for 18-22 gravity and below. Prices are obtained from reliable trade journals. As in the case of coal, we keep also a record of the freight rates on oil to different points along our system.

Work of Obtaining Data Simplified

The object in securing this information and keeping it up to date is to simplify the work of securing data from industrial plants when we call to make a survey. The fewer questions one must ask a plant owner or manager in making a survey, the better the impression, because such men certainly do not like the idea of giving an outsider the cost of their fuel. In making surveys, our men have an industrial survey card, that, when properly filled in, will enable the sales engineer to talk contract intelligently to the manager of the plant.

This card provides for the usual information at the top in regard to name of plant, kind, location, name of manager, etc. Next, is space to list the equipment which we propose to put on gas, the hours operated per day and days and months per year. A little further down, we list the load factor, minimum output, maximum output (that is, in regard to products manufactured), present fuel or fuels that the plant may now be using, heat content of such fuel or fuels, consumption per year, maximum month, maximum day and hour. The card contains space also for present fuel storage capacity, present labor used in firing per shift and number of shifts per day, fuel contracts, prices, freight, unloading cost, firing cost and total cost per unit, ton, barrel, etc.

We then have a division for gas equivalents (this may be filled out in your own office), gas consumption per day, maximum month, maximum day and hour, and the price of gas to offset the present fuel on a straight B.t.u. basis. Then follows an estimate of the expense to the gas company necessary to connect this plant, giving the length of pipe line, size, etc., and the maximum and average pressures to be maintained at the plant. There is, of course, the usual space for remarks, and on the back of the card is space for estimated monthly consumption of the present fuel and gas equivalent, date of calls and nature of calls.

Terms of Contracts

It might be well here to outline some of the terms and conditions of our large industrial contracts. We will not, under any condition, write large industrial contracts for a longer term than five years. We think it is difficult to see the price of coal or oil longer than five years hence, and why tie ourselves up longer than that, as we are competing with those fuels?

Our large industrial sales are made on a pressure base of 8 ounces above atmospheric pressure, atmospheric pressure assumed to be 14.4 pounds per square inch and gas temperature assumed to be 60° F. I believe this conforms with the regulations as set out by the Southwestern meter school. Our sales to large industrials in most all cases are made through orifice meters. This depends, of course, on the operating conditions encountered at each plant.

One of the most important clauses of our large industrial contracts is the shut-off clause (the reason for this will be discussed later). Under this clause, we have the right temporarily to discontinue service to large industrials, in whole or in part, at any time we need the gas for domestic or other purposes. This feature of the contract naturally gives the sales engineer plenty of trouble, in securing a contract at what we think is a fair and reasonable rate, for the reason that the industrial plant manager must equip his plant for standby fuel, keeping a few days' supply of such fuel in stock at all times, and, of course, have his equipment in condition so that he will be in position to change to a standby fuel on one to three hours' notice.

We often find that the rates we are able to quote are close to the present fuel cost, but due to the expense of making the change to burn gas and some form of standby fuel, it is impossible to secure the industrial contract. In cases of this nature, it is advisable to offer the assistance of our engineers, pipe line men, welders and any other assistance that the load will justify.

As to Rates

I have not discussed rates in this paper. It is sufficient to say that in contracting large industrial loads you will be called upon to compete with present fuels. If your survey shows that the average of the industrials can pay an 18-cent rate, then set up the steps of your rate to average 18 cents for this class of business. In case you prefer the flat rate and are in position to make that type of rate, then your problem is much simpler.

The installation of gas burners and other equipment, the selection and type of same are left with the industrial plant, as we do not sell this equipment direct. We have found it advantageous to stay out of the equipment business, but we do, in all cases, however, recommend that the proposed industrial buy the very best type of burners, etc., to meet his requirements. He naturally will be a better satisfied customer, and we will have a better opportunity of renewing his contract, if he has received good service and is saving money by the use of natural gas, and this can better be obtained by the use of properly designed equipment.

The industrial man should be thoroughly familiar with the sources of gas supply connected to his pipe line system and should be familiar with the capacities of his system at different points, as well as the quality of gas which is being delivered. He should know, also, something about meter measurement, both orifice and positive, and should be thoroughly familiar with the problems involved in the proper utilization of gas in the industrial plants which he is serving and proposes to serve. We are ever being confronted with new problems in the natural gas industry in the utilization field as well as other phases and the industrial man must be ever alert to increase his knowledge of all such improvements.

Keep in Touch with Customers

Our industrial department strives to keep in close touch with all of its customers at all times. We have learned that a small grievance may grow to importance unless handled at the outset. Prompt response to minor complaints also assures the customer that the gas company is attempting to give him the best service possible and is endeavoring to keep his equipment in condition so that pressures and measurements will be constantly accurate.

We all know that natural gas eliminates labor, usually increases burning efficiency, simplifies operating conditions, is conducive to a better manufactured product, eliminates worry and bother of purchasing and watching shipments on such fuels as coal and oil, eliminates investment and insurance on storage fuel, eliminates loss of fuel in storage and has

(Continued on Page 211)

*Before May convention Natural Gas Department, A. G. A., New Orleans.

SELLING MORE GAS APPLIANCES ONE WAY OF INCREASING DOMESTIC LOAD

By W. J. MacIntyre
General Sales Manager, Southern Cities Distributing Co., Shreveport, La.*

Gas was first used as a medium of light. Since then it has passed through developments represented by gas cooking, gas water heating, gas house heating, gas for many industrial purposes, and now gas refrigeration. For years 5 per cent increased revenue per year was considered healthy growth. Merchandising was not then one of the gas company's activities, the sale of appliances being handled by hardware, furniture and other dealers whose chief interest lay in the possible profit and not in the development of gas as a source of revenue.

Natural gas managers, realizing that this method was not conducive to future growth, established merchandising departments of their own. As a result of this backing, supplemented by the intensive work of those actively connected with selling appliances, merchandising is no longer an experiment, but an accepted asset. This is born out of reported consumption increases in some instances up to 50 per cent and more, compared to the same corresponding month one year previous. Still, in the face of this growth, which would have been considered 10 years ago the ultimate pot of gold at the end of the rainbow, we hear in all general meetings in which the thinkers of the gas industry participate, the query—"How can we continue to build the domestic gas load?" The apparent answer, in view of the foregoing, would be: Sell more appliances. The natural questions following are: "What appliances shall we sell?" Are we not merchandising all possible domestic load builders? and "can the appliances themselves be made more salable?"

Cooking with gas has long been accepted. The entire heating of the home has been almost universally adopted in natural gas territory. Now, through the merchandising of gas refrigeration, we are able to approach the customer, offering a new type of service to the home.

The aim of all gas company executives is to make gas meet all the fuel needs, except lighting, in the home of the domestic consumer and at the same time fill in the valleys found in domestic consumption curves when comparing summer load to winter load. Gas refrigeration represents the present possible outlet for increased domestic consumption, the greater portion of which increase will be summer load. As is the case with any new development, some dissatisfaction was experienced when gas refrigeration units were first placed on the market. These difficulties are a thing of the past and we may look forward to the future merchandising of this type of equipment with enthusiasm.

The addition of 700 to 1,500 feet of gas per month per consumer does not compare with house heating as a volume load builder. Still, it represents, at present writing, the largest single increase in prospect with which to build domestic load. Regardless of the potential revenue which this appliance may produce, the intensive merchandising of this particular article places the gas company in the position of rendering that complete home service which the customer of today demands.

May Offset House Heating Peak

It is important that we recognize and accept gas refrigeration for the reason that its perfection and practicability represent the opening wedge to that use of natural gas which may, in whole or in

(Continued on Page 230)

*Before May convention, Natural Gas Department A.G.A., New Orleans.

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Gas Has An Active Year in California

Potential Production Increased. New Fields Provide Fuel for Additional Areas and Big Pipe Line Projects Started

By W. S. Yard
Vice President in Charge of Gas Construction and Operation, Pacific Gas & Electric Co., San Francisco*

The past year has been one of great activity in the natural gas business in California. The potential production was greatly increased, new fields were further developed at great distances from the older fields, thus providing a supply for a greater portion of the State than at any time previous. Sixty-five per cent of the State's consumers are using natural gas and upon completion of many miles of new transmission lines now under way 95 per cent of the consumers will be using it, which will eliminate a great portion of the valuable product now being wasted.

The outstanding event of 1929 in this industry in California was the commencement by the Pacific Gas & Electric Co., in August, of the transportation of natural gas from the Kettleman Hills oil and gas field to San Francisco, Oakland, San Jose and other cities and towns in that section of the State which never before had had the advantages afforded by its use. This marked a new era of industrial development in this territory as evidenced by the fact that already a great many old established industries have changed over to this fuel. A second line is about completed which will transport gas from the same field to the northern part of the State. When the proposed lines are completed natural gas will be served from San Clemente, which is 60 miles south of Los Angeles, to Roseville, 80 miles northwest of San Francisco, a distance between these points of approximately 450 miles all within the State which will be connected from end to end, although being the property of several companies.

Standard Enters Utility Field

Another interesting development of the year was the entering into the public utility business of the Standard Oil Co. of California through its purchase of control of Pacific Public Service Co., of which the Coast Counties Gas & Electric Co. is a subsidiary and a distributor of gas. Since the Standard Oil Co. of California owns in fee approximately 50 per cent of the Kettleman Hills area, where the developments to date have indicated an enormous potential natural gas production, the operation of the gas companies it purchased will give it an outlet for a large volume of its own gas.

Although there is a surplus of gas in the fields in the southern part of the State at the present time this surplus will undoubtedly be reduced due to conservation measures and natural decline. In order to augment its supply for Los Angeles and vicinity in the future the Southern California Gas Co. has laid 70 miles of line from the Kettleman Hills tying in with its system from the Midway-Sunset Field to the southern city. This line is also aiding in the conservation of gas.

In changing from a manufactured gas with a heating value of 550 B.t.u. to natural gas with a content of 1,170 B.t.u. per cubic foot the companies in northern California were confronted with the same problems others had faced before. The Pacific Gas & Electric Co. organized a complete new department to take care of the huge task of converting from manufactured to natural gas.

Utilization Crews Trained

Over 800 men were hired and trained so as to be familiar with all makes of apparatus in order to know how to make them suitable for burning natural gas. These men were divided into groups known as utilization crews, each crew being in charge of a manager, and the men all wearing khaki uniforms with the company name on them. Notices were sent to consumers in a certain district three or four days before natural gas was turned into the mains when the crews of adjusters went their rounds. Trucks loaded with orifices and other appliance parts went along with the crews to supply them with whatever they needed.

*Before May convention, Natural Gas Department A.G.A., New Orleans.

CALIFORNIA NATURAL GAS STATISTICS FOR JANUARY, 1930

(All figures are in thousands of cubic feet)

Field—	Production	Repressuring and storage	Sold to gas companies	Wasted to atmosphere
Huntington Beach	1,098,000	64,000	239,000	16,000
Long Beach	7,456,000	.....	2,410,000	1,284,000
Santa Fe Springs	18,749,000	250,000	2,367,000	12,096,000
Ventura	5,545,000	.....	3,533,000	775,000
Kettleman Hills	10,868,000	23,000	2,228,000	7,789,000
Midway-Sunset	2,152,000	51,000	777,000	168,000
30 other fields	744,000	.....	133,000	436,000
Total	46,612,000	388,000	11,687,000	22,564,000
Daily average	1,500,000	12,500	377,000	728,000

There are 48 oil fields in California, all located in the southern half of the State; of these 36 produce amounts of gas worth considering. The major fields are Santa Fe Springs, Long Beach Huntington Beach, Ventura, Midway-Sunset, Kettleman Hills and Elwood.

The accompanying table, for the month of January, 1930, shows the production from each of these major fields, the combined production from the other 30 fields and the total for the State. It also shows the amount stored and used for repressuring, the amount sold to gas companies and the quantity wasted. Figures for quantities used for various purposes in the field, plant shrinkage, etc., are not included.

In several fields attempts are being made to conserve the gas by repressuring old wells or storing the gas. By referring to the table it will be noted that about 25 per cent of the gas stored is in the Santa Fe Springs Field. There they have a depleted oil sand, the Meyer zone, in which it is possible to store large quantities of gas at low pressures. In the Midway-Sunset Field the gas is being stored in a sand from which large volumes of dry natural gas have been taken in the past.

Attempt in Kettleman Hills

In the Kettleman Hills a hole was drilled into a dry sand located considerably above the producing horizon. Attempts are being made to store gas in this well but it will be noted that the quantity put in amounted to less than 1,000,000 feet per day.

Twenty-seven per cent of the gas produced was sold to gas utilities for transportation to and distribution in cities and towns, whereas the amount blown to the air during that month was 43 per cent of the production. It is this enormous waste of almost 23,000,000,000 feet per month or 760,000,000 feet per day that caused the great interest shown and the effort of the state officials, major oil companies and gas companies to reduce this loss. The value of this wasted gas is approximately $2,000,000 per month at the present time. Only dry gas is wasted, however, as all production in the State containing gasoline is treated in absorption plants, the yield for the month in question being about 70,000,000 gallons for the 139 plants operating.

Since the natural gas delivered in California has no odor it has been the decision of all the utilities in the State to inject a liquid volatile at pressures up to 250 pounds and at temperatures as low as 55° F. into the transmission or distribution mains. Among the various requirements of the odorant are that it must be non-toxic, not nauseating and with one per cent of gas in a room there should be a strong odor. As the lowest limit of explosibility of natural gas in air is 4.4 per cent this gives a factor of safety of 4. The odorant used, a by-product of crude oil, is injected into the gas at the rate of from 3½ to 5 gallons per 1,000,000 feet of gas transported.

Complaints Increase

The results of putting the odorant into the gas are not noticed until three or four days after it is first put in the lines. At first the number of complaints increased to ten times the number recorded before the injection of the liquid, these complaints being reduced until under normal operating conditions they average about five times the number reported before any odorant was used.

The engineers for the gas companies have done meritorious work in devising the required apparatus; work is still being done along these same lines and no doubt great improvements will be made in the future as plans are being worked out already to perfect apparatus so as to control the rate of injection into the main pipe lines in proportion to the rate of flow of the gas.

Another branch of the business that is expanding rapidly in the State is the distribution of bottled gas to consumers who live in areas not reached by the gas pipe lines. Four companies have entered this field to date, namely, the Standard Oil Co., Shell Oil Co., Carbide & Carbon Chemicals Corp., and Rock Gas Co. Twelve thousand consumers are being served with this gas today and since this business has just started it is expected it will grow rapidly and that possibly 20,000 consumers will be added this year.

This bottled gas is propane under a pressure of 250 pounds and is extracted from the wet natural gas at the gasoline plants. Its distribution means that every place in the State can have natural gas and its use will be of great benefit to people in small towns, ranches, summer camps, etc.

"Liquid Gas" Plans

At this time one small town, Moore Park, is being furnished with this gas but the West Coast Gas & Fuel Co. has made application to the State Railroad Commission for permission to supply the "liquid gas" to 28 towns not contiguous to the natural gas lines. They plan to furnish butane in tank cars to the towns where it will be mixed with air giving

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SATURATING DRY NATURAL GAS WITH STEAM OR OTHER VAPORS DISCUSSED

By H. L. Gaidry
Chief Engineer Gas Department, New Orleans Public Service, Inc.*

The practice of saturating dry natural gas with steam or other vapors, will perhaps be advocated by some and condemned by others, until the passage of sufficient time to permit the accumulation of enough evidence to prove or disprove its value. At the present time we are still in the experimental period, and it is too early to have obtained sufficient evidence to permit drawing definite conclusions. Therefore, this paper is presented as an outline of the procedure followed by New Orleans Public Service, Inc., with its results, rather than as an advocacy of the practice of saturation of natural gas, or as a definite recommendation in its favor.

With this thought clear in our minds, we may go back about two years, at which time it was definitely known that our property would be converted to natural gas. All of the evidence that we could gather at that time pointed to the belief that a large increase in leakage would follow the conversion of a low-pressure system from manufactured gas to natural gas unless effective preventive measures could be devised. This was generally believed to be due to the drying action of the gas on the joint materials, which had previously been kept in a saturated condition. We were also convinced that once the drying out of the joints should be permitted it would be extremely difficult, if possible at all, to resaturate them in an attempt to reduce leakage. This belief was corroborated by actual test on a section of a distribution system where an extremely large increase in leakage followed the introduction of natural gas.

Gave Promise of Controlling Leakage

We concluded that the saturation of the natural gas with water vapor or other vapors gave promise of efficacy in keeping leakage under control, and we also decided that it would be the part of wisdom to begin the practice of saturation of natural gas immediately upon its first delivery.

Our decision on the method to be employed in saturating the gas was governed by the belief that the gas must enter the low-pressure system in a thoroughly saturated condition, either by the employment of water vapor, oil vapor, or some other vapor—depending upon the adaptability of one or more of the various possible saturants to our conditions.

After considering several possible methods of saturation, including bubbling through water and spraying with oil, it was decided that a spray of steam directed into the path of the gas promised the most advantages, due to its flexibility of application and also due to the fact that it would enable us to raise the temperature of the gas a few degrees higher than our average main temperature and secure 100 per cent saturation at this temperature, so that the gas upon entering the mains would have to cool and thus condense some of the vapor into the mains. Or, on the other hand, should the initial saturation be less than 100 per cent, then the cooling of the gas would raise the percentage of saturation upon entering the low pressure system.

Distribution System Discussed

At this point, a brief description of our distribution system is necessary. All of the gas for domestic consumption comes first into the gas plant at a pressure of 50 to 75 pounds. From the plant and circling the city, we have a belt line which we call the intermediate pressure system, operating at a pressure of 5 pounds, with district regulating stations feeding from this system into the low-

*Before May convention Natural Gas Department A.G.A., New Orleans.

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123,000 tests a year

In the Crane testing laboratories the weighted arm of a specially designed machine measures the steadily increasing load suspended from a small bar of metal. Watching it intently is a man who has at his command instruments that measure to .00005 of an inch. The bar begins to yield; he notes the weight. It snaps; he notes the weight. Disengaging it, he measures the stretch and diameter at the breaking point. All day he repeats this operation on samples sent every hour from the Crane foundries.

So, long before the valve or fitting is placed in a line, Crane engineers know exactly what it will do. For these tests form a part of the 123,000 determinations Crane Co. makes on its own materials every year.

63,000 of the tests are chemical; not one component from pig iron to limestone flux is charged in a Crane melting furnace whose suitability has not been determined by analysis. 60,000 are physical; not one hour's melt is drawn off in a Crane foundry whose physical properties—tensile, transverse, and torsional strength, yield point, breaking point, elongation, and reduction of area are not known.

At no step from crude materials to finished valves does Crane Co. risk any chance of error. Even the permeability and composition of the very sand in the molds is dictated by the research laboratories. Only when the completely assembled materials have shown their ability to withstand working conditions do the determinations end.

Thus Crane quality is maintained; Crane standards are upheld. Crane service, however, goes even further. To assist the designing engineer in choosing the right materials, Crane Co. holds men with long experience ready to confer with him at any time. A wire will summon one of them.

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Ideal Coating for Pipe Is Foolproof

Should Not Only Meet Requirements of a Waterproofing Compound, but Be Immune to Human Element in Its Application

By George Wehrle
Superintendent Gas Department, Public Service Co. of Colorado, Denver, Colo.*

We use methods of pipe protection for the purpose of increasing the life or period of usefulness of the pipe, but this brings up other questions, such as: Why do we want to increase the life of the pipe beyond the natural life of the uncoated pipe? How much are we justified in paying for such protection in case we can get it? What is the most practical and economical way to do it? The answers to these questions involve a most careful analysis of each individual case and a different answer may be obtained in each case analyzed.

The United States Bureau of Standards, the American Petroleum Institute, the American Gas Association and others have given much thought and effort toward the solution of the problem of protecting underground structures. It might be well to follow the progress of the American Gas Association's work in recent years.

In 1924 the distribution committee of the American Gas Association tackled the problem by asking the following question of representative gas engineers of the country: "What kind of pipe coverings are available and how much additional life can be expected from the use of such coverings on steel or wrought iron pipe?" The object of this question was to throw light on the subject as to whether the use of a pipe covering would solve the problem as between the relative value of steel and wrought iron pipe for general distribution use, which was the subject then under discussion.

The committee summed up the answers to this question as follows: "From a review of all the answers it would appear that the controlling factor as to whether coating should or should not be used will depend on the local condition and then it can be expected to be only as good as the manner in which it is installed. That is, the labor of application and laying of pipe will make a good coating bad and may somewhat improve a poor coating. The differences of opinion and experience all indicate that this subject deserves further research."

The 1927 committee of the American Gas Association appointed a subcommittee on pipe coatings. This committee laid down the following specifications as being the characteristics of a good pipe coating:

A. The coating material should be impervious to air and moisture.

B. It should adhere tenaciously to the surface of the pipe.

C. It should not be brittle at 0° C. (32° F.) or soften to such an extent at 60° C. (140° F.) that it will run or rub off during handling.

D. It should withstand without chipping or spalling off the shocks and abrasion to which the pipe is likely to be subject during transportation and installing.

E. The coated pipe should not stick together during transportation.

F. The material should be easily applied either in the yard or the field.

G. The material should be of such a character that any damage occurring in the field can be readily repaired after installation.

An analysis shows that these are most rigid specifications, but entirely essential, however difficult of attainment.

Report Summarized

This report is summarized in the following words: "No tests have been made either in the laboratory or the field as time has not permitted and also as there are so many points to be considered in making such tests that no two individuals or groups would agree that all the methods used and tests made were absolutely reliable. Before we can get anywhere on this matter as to tests, the many parties interested in coatings should make a study of all coatings to be tested and then agree on the why and wherefores of each test."

Other references are made in this report to the desirability of a central body supported by the Government and the various associations and companies interested to study the corrosion problem and try to devise protective measures.

The 1928 committee confined its efforts to getting up a bibliography of all existing references and data on protective coatings for underground pipe. In the same year, the Pacific Coast Gas Association had a paper on pipe protection by Mr. Hiskey of the Southern California Gas Co. in which the whole subject was fully analyzed.

The names of the 1929 subcommittee on pipe coatings and corrosion are herewith given to show the type of man working on this problem: J. K. Crowell, chairman, Westchester Lighting Co., Mount Vernon, N. Y.; E. R. Enander, Public Service Co. of Northern Illinois, Chicago; Dr. Scott Ewing, United States Bureau of Standards, Washington; W. M. Henderson, Los Angeles Gas & Electric Corp., Los Angeles; R. J. Kuhn, New Orleans Public Service, Inc., New Orleans, La.; K. H. Logan, United States Bureau of Standards, Washington; E. F. Schuldt, Peoples Gas, Light & Coke Co., Chicago; A. V. Smith, United Gas Improvement Co., Philadelphia; F. N. Speller, National Tube Co., Pittsburgh, Pa.

Work Laid Out

This committee met with representatives of the American Petroleum Institute and the United States Bureau of Standards for the purpose of formulating plans for the work of the full-time research men who had been appointed in the two associations, in co-ordination with the Bureau of Standards. It was decided that the associations' representatives should work as associates of the Bureau of Standards. Dr. Scott Ewing was appointed associate for the American Gas Association and Gordon N. Scott for the American Petroleum Institute.

Thus it will be seen that a wide step was made only last year for the centralizing of the research work on pipe protection thereby preventing duplication and disjointed effort. And now we come to the present with Mr. Scott's report on the Field Inspection of Protective Coatings, delivered at the American Petroleum Institute meeting in Chicago on December 5, 1929. All of the ideas which I might have had that we had got anywhere on this problem of pipe protection were knocked into a cocked hat by Mr. Scott's report giving the result of 449 inspections made in the field on every different kind of coating. Any one who has not read his Table No. 3 giving composite data on coating inspections by groups has failed to get a graphic cross section of the value of pipe coatings right up to date.

How Meet Specifications?

The specifications laid down by the American Gas Association for a good pipe coating are, of course, the characteristics of an ideal protective covering. How they are going to be attained is beyond my conception. The first stipulation that the coating material shall be impervious to air and moisture covers a world of territory in itself, for it describes exactly what we must do in order to protect the steel pipe, that is, make it air and moisture proof. All of the other stipulations are simply details of the accomplishment of the first require-

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*Before May convention, Natural Gas Department A.G.A., New Orleans.

Natural Gas America's New Giant

Industry's Output in 1929 Two and One-Half Times That of 1922 and Increase Over 1928 More Than 20 Per Cent

By Bernard J. Mullaney
President American Gas Association, Vice President The Peoples Gas, Light & Coke Co.*

In a moment of exuberance some weeks ago, I let slip the suggestion that natural gas development might turn out to be the very biggest thing immediately ahead of us in the public utility business. When that come back to me in the austerity of cold print, I wondered whether it was a case of premature explosion. Then I began to check up.

On the basis of capital investment, this gas industry of ours is now some $150,000,000 better than a $5,000,000,000 industry, with an annual revenue of about $1,000,000,000 last year. Natural gas enterprises account for something more than a third of that total investment, and they had about 42 per cent of the total revenue last year.

The natural gas output of the country in 1929 was approximately two and one-half times the output of 1922, only seven years before. The increase last year over 1928 was better than 20 per cent, an impressive increase for a year of declining business.

The merits of natural gas, in point of efficiency, convenience, cleanliness and economic advantage are beyond question. There are apparently immense reserves of it available. But the sources of supply are usually remote from the potential large volume markets for gas and large scale financing is required for getting the product to those markets. In view of these circumstances, perhaps it was not altogether immoderate to suggest that natural gas development, both financially and industrially, may turn out to be the very largest phase of public utility and public service development in the immediate future.

As energy—usable energy—the natural gas production of 1929 was equivalent to 527,000,000,000 kilowatt hours of electricity, and that is nearly six times the total production of electrical energy in the United States last year. (A less flattering collateral fact will have mention later on.)

In a general way, you know what happened. The gas business is now predominantly, and almost exclusively, a heating business. And the manufactured gas companies have executed this complete "about face" without missing a step. They had to find new business to make up for annual losses of lighting load before they could register a positive gain.

To do that the business had to feed the junk pile considerably. It had to scrap many old ideas, old methods, old and crystallized conceptions of corporate responsibility to investors and to customers, and also to the general public, as reflected in the rise of public utility regulation.

But that is not the whole story. The industrial, commercial and financial "muscle" developed in shifting the gas business from lighting to heating, has enabled the business to get results undreamed of when the shift began. One example will illustrate my meaning.

Achievement of 11 Years

In the last 11 years we have made and distributed more manufactured gas than had been made in all of the previous 107 years since the first gas company began operations in London in 1812.

There is some significance in the circumstance that the period of greatest growth and progress in manufactured gas has coincided almost exactly with the period in which the American Gas Association has been a going concern.

This is of more than passing import to "America's newest giant, natural gas," if the young giant is to get its growth without too much of mumps, measles and whooping cough. For the work of the American Gas Association concerns natural gas quite as much as it does manufactured gas.

In manufactured gas, we figure that transportation and distribution equipment represent 60 per cent or more of the total investment. This proportion of the total is likely to be higher in the natural gas business because of the distance to be covered in getting to market. Maintenance of transmission and distribution systems, in all details, from main line laying and pipe jointing to protection from soil erosion, is a problem common to both manufactured and natural gas and no light one.

Load factor is the greatest single element in the economics of long distance gas transportation. And load factor brings up all the details of marketing, from utilization on one hand and rate making on the other, to personal salesmanship in disposing of the product and personal service to customer users.

Our gas burning appliances are not all they should be. They have been improved much in recent years, thanks largely to the stimulation, encouragement and subsidizing of research and experimentation fostered by the American Gas Association. Without this improvement, the manufactured gas business could not have made the growth record of recent years to which I have referred. But there is still plenty of room for further improvement, and achieving it is quite as much the concern of natural gas as it is of manufactured gas, especially in the development of house heating and industrial appliances that will more efficiently apply the energy delivered from the gas main.

Education and Experience Needed

Marketing suggests many details on which all of us need education and experience, if America's newest giant is to

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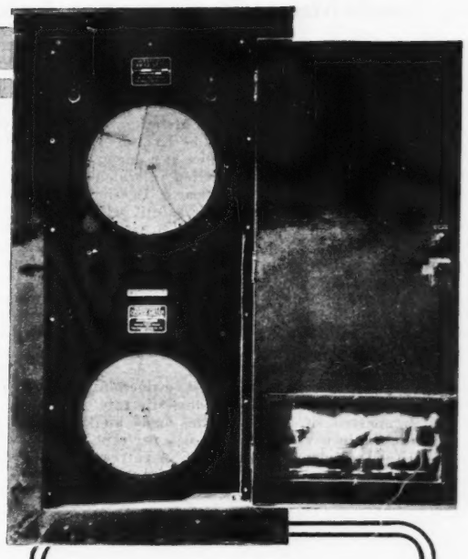
*Before May convention, Natural Gas Department A.G.A., New Orleans.

System of on Leakage



The box at the curb houses a duplex installation, consisting of a 50" and a 10" Westcott Orifice Meter as used by the Los Angeles Gas and Electric Company to check leakage in each district throughout their high pressure system. Placed between curb and walk it is easy to change charts. Testing is provided for by placing taps beside the meters; and the box can be fitted with bleed pipes from the manhole close by. The manhole gives access to the orifice disc in the gas main and to meter connections. With the 10" meter for measuring low volume flow and the 50" for measuring high volume flow, a record of maximum accuracy is obtained. Such installations permit exact knowledge of leakage by districts and quick location of the fault with only a fraction of the effort involved when the whole system must be examined.

FOR minimizing leakage in high pressure distribution, the Los Angeles Gas and Electric Company has a solution. The entire piping system is divided into comparatively small districts. Then, for each of these districts, the gas is measured by a Master Metric Orifice Meter.

The desirability of saving gas through subdivision and early discovery of leakage need not be stressed. The main value of this announcement lies in the fact that a progressive Company has actually evolved a successful modern method that is suited to widespread application in high pressure distribution. And, similarly, for low pressure work, a Metric Orifice Installation, designed for an average of one inch differential loss, offers comparable advantages.

Our research service and data are always at the command of any Gas Company considering a measuring problem of this character.

Complete information is also available on Linderman Orifice Meters, Metric Indicating Flow Meters, Metric Rate Volume Controllers, and Metric Ironcase Displacement Meters.

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MEASUREMENT ENGINEERS
CUBIC FEET

Demand for Gas Forecast Accurately

Application of Degree Day Deficiency to Computing Domestic and Heating Loads Makes Performance Accord Closely With Estimates

By R. M. Redding
General Superintendent, Dallas Gas Co., Dallas, Tex.*

Five or six years ago the Dallas Gas Co. began to make occasional studies of the relation between temperature and natural gas requirements for domestic sales. Since that date from time to time operations have been such that accurate data covering maximum domestic rate demand have been available. These occasional opportunities in connection with analyses of yearly operations have afforded sufficient information to enable the company to set up certain measures of maximum demand, total yearly requirement, and space heating use, which values have proven reasonably accurate and have permitted forecasts as to total sales and predictions of maximum demand under given conditions that have checked closely with performance.

As a background for the deductions to be presently drawn it may be in order to place before you briefly a statement as to the completeness of the development of domestic rate sales. For 20 years Dallas, both metropolitan and suburban, has used natural gas. At the present time this fuel for domestic purposes is looked upon as a necessity equal to water. A survey made last July shows that 99 per cent of the total domestic fuel requirement for cooking, hot water and heat for the 315,000 population in the area served is supplied by natural gas. Compared with the survey of the Real Estate Board, which is made each year, the number of active meters is 101 per cent of the indicated requirement to serve all domiciles, warehouses, stores, etc., in the city. Hence, we may feel justified in the conclusion that sales volumes and other operative data taken in a city 99 per cent saturated as to domestic demand are a reasonably accurate measure of present day sales possibility.

Space Heating Presents Problem

To those charged with the advance estimating of sales in both old and new territory perhaps the most perplexing phase of the problem is that of determining how much gas will be used for space heating. We may think this a problem of recent development. However, such is not the case. It may be that the much used term degree day deficiency is of recent coinage, but the attempt to develop a definite measure of the relation between temperature and fuel requirement dates back many years. An old edition of the "Ideal Fitter," now out of print, carries two curves showing the amount of coal that will be required in Chicago and in Detroit per square feet of radiation per heating season. These curves show that if the number of hours during which heat is required be multiplied by the maximum demand and this product by .33, the result will be the season's fuel requirement. This, it will be noted, is only a variation of the degree day method of compilation.

Coming back to the question of development of a measure of gas fuel requirement for domestic use, other than cooking and hot water, there is submitted herewith as Exhibit 1 an analysis of domestic rate sales in Dallas for the past six years. It will be noted that an operative year from June 1 to June 1 is used. This is for the purpose of getting as nearly accurate periodic sales figures as the operation of the company will permit. This operative year is divided into two periods of five and seven months respectively. The seven-month period, November to May inclusive, being that part of the year in which gas used for space heating purposes may appear in the billing.

Analysis of Sales Per Meter

The second section of this Exhibit 1 is an analysis of the sales per meter during this seven-month period in which heat registration may appear. In the breakdown of this volume of sale it will be evident that we are starting with a definite known average sale per meter. However, the deduction for commercial paying domestic rate, as well as the deduction for cooking and hot water use, are estimates and must of necessity be so, due to the fact that the registration for all domestic rate service in the home is through one meter.

With respect to the first deduction, namely, commercial paying domestic rate, an analysis of one year was made and resulted in a value equal to 6½ per cent of the total domestic rate sale. A further survey of the six years under consideration develops that if 50,000 feet per month be taken as a dividing line between pure domestic rate service and commercial and industrial paying domestic rate, the minimum percentage was 6 per cent and the maximum 7 per cent. Therefore, for the purpose of this analysis 6¾ per cent of the gross domestic rate sale is deducted for commercial and industrial use paying domestic rate.

The second deduction is that for cooking and hot water. This allowance is supported by operating figures for May and October, which months are average for the year, but somewhat lower in hot water requirements than the winter months, and, taking into consideration the fact that 65 per cent of meters carry a hot water installation freely used during winter period. Subtraction of these two items from the total registration leaves a quantity chargeable to space heating.

If there be a definite relation between space heating demand and temperature the equation should show a constant per unit of heat demand from year to year. Division of the annual degree day deficiency into the quantities of gas chargeable to space heating gives a surprisingly uniform value for this constant. As will be noted in the tabulation this value is 16 feet with a plus and minus tolerance of less than 2 per cent.

Verified on Mass Operation

In so far as Dallas and North Texas are concerned this unit value has been verified on mass operation up to 300,000 meters.

In the tabulation which I have just been discussing the time unit has been the over-all heating season, or approximately six months. We believe that dealing in time units smaller than the heating season is inadvisable. The question naturally arises as to how sensitive is the relation that exists between temperature and fuel requirement for heating. To answer this a graph has been made up covering the daily mean temperature and the actual daily delivered sales for space heating, covering the period from October 1, 1929, to April 1, 1930, and on a city-wide basis.

Daily volumes of gas used for space heating were determined by deducting from city gas delivery: (1) Unaccounted for, (2) industrial sales, (3) commercial paying domestic rate and (4) allotment to cooking and hot water, the daily residual being space-heating sales. This daily remainder divided by the number of active domestic meters on that day gives the actual delivery per meter for space heating (in addition to that used for cooking and hot water).

If the ratio of 16 feet per meter per degree day deficiency be correct then a plotting of the actual sale per meter against the degree day curve and on a ratio of 16 to 1 should superimpose the sales curve upon the temperature curve.

This definite relation exists and such relation follows with reasonable sensitivity when one considers that no weight is given to several possible minor variables that may effect volume of use in some degree.

Stabilizing of Sale

Exhibit 2 is offered as a record of the gradual stabilizing of sale on a per capita basis. Generally, sales actual and potential are based on a per meter basis. Obviously this is not a measure of saturation. The limit of sales must be considered as that volume which registers 100 per cent of the domestic rate fuel requirement of the total population in the area served. Hence the desirability of measuring possible sales by a per capita yardstick.

The per capita value of this unit is the present-day total demand and is not influenced by price variation so long as the price charged is within the economic limitations of competition. In support of this statement your attention is called again to Exhibit 2. You will note that the per capita use has increased during the past 10 years in the face of substantial increases in dollar cost and in gold dollar purchase value rate.

It will be observed Dallas seems to be stabilized on a value of about 14,800 feet per capita per year for domestic rate use, this being the average of the last five years reported. The variable is space heat requirement and has a range of 1,800 feet between minimum and maximum years.

As will be inferred I have been leading

(Continued on Page 230)

EXHIBIT 1—DALLAS DOMESTIC RATE SALES

June to June year—Split into (1) period of no heat requirement. (2) Period of space heat demand registration. All figures in cubic feet and are average sale per active meter.

	June, 1923–May, 1924 (cu.ft.)	June, 1924–May, 1925 (cu.ft.)	June, 1925–May, 1926 (cu.ft.)	June, 1926–May, 1927 (cu.ft.)	June, 1927–May, 1928 (cu.ft.)	June, 1928–May, 1929 (cu.ft.)	Six-year average (cu.ft.)
(1) June-October	15,570	14,610	14,190	14,280	14,700	14,910	14,710
(2) November-May	70,100	59,980	68,410	61,480	62,560	68,970	65,250
Year	85,670	74,590	82,600	75,760	77,260	83,880	79,960

ANALYSIS OF HEATING SEASON SALES (November-May)

Total	70,100	59,980	68,410	61,480	62,560	68,970	65,250
Less average sale per meter to commercial paying domestic rate	4,740	4,060	4,620	4,000	4,230	4,640	4,380
Less allowance of 110 feet per day for cooking and hot water	23,320	23,320	23,320	23,320	23,320	23,320	23,320
Remainder is chargeable to space heating demand	42,040	32,600	41,016	34,160	35,010	41,010	37,550
Degree day deficiency	2,613	2,094	2,558	2,106	2,192	2,573	2,341
Cubic feet of 1,000 B.t.u. gas required per degree day per meter (in addition to requirements for cooking and hot water)	16.20	16.30	16.00	16.20	16.00	15.95	16.04

EXHIBIT 2—DALLAS DOMESTIC RATE SALE DATA

	Population served	Annual dom. rate sales M. cu. ft.	Sales per capita cu. ft.	D. G. Co. avg. sale price per M. cu. ft.	Gold dollar purchase value rate in cents per M.
1920	*204,000	2,576,280	12,600	49.4c	†29.
1921	206,000	2,650,481	12,800	68.6	42.
1922	222,000	3,102,733	13,900	68.6	46.
1923	239,000	3,429,026	14,300	68.6	49.
1924	256,000	3,736,633	14,600	68.6	52.
1925	272,000	3,967,815	14,600	70.8	57.
1926	288,000	4,441,353	15,300	73.2	61.
1927	299,000	4,158,754	13,900	76.8	68.
1928	310,000	4,863,861	15,600	75.8	70.

*Population figures, census and Worley's Directory. †Based on Professor Kemmerer's curve for value of gold dollar taking 1913 as par.

EXHIBIT 3

	Year ending June 1, 1925	Year ending June 1, 1926	Year ending June 1, 1927	Year ending June 1, 1928	Year ending June 1, 1929
Total domestic sale rate (M.C.F.)	3,648,025	4,445,685	4,177,660	4,532,827	5,240,633
Deduction 6¾% for commercial use	246,242	300,084	281,992	305,966	353,742
Pure domestic sale	3,401,783	4,145,601	3,895,668	4,226,861	4,886,891
Population	256,000	272,000	288,000	299,000	315,000
Domestic use per capita	*13,250	15,200	13,500	14,100	15,450
Cooking and hot water use per capita	*6,780	6,780	6,780	6,780	6,780
Space heat use per capita	6,470	8,420	6,720	7,320	8,670
Degree day deficiency	2,004	2,558	2,106	2,192	2,593
Heat requirement per D.D.D. per capita†	3.22	3.25	3.19	3.34	3.35

*Cubic feet. †Average for six-year period, 3.3.

Note—County Gas Co. with approximately 30,000 meters in residential territory and with practically no commercial sales taking domestic rate has a five-year average domestic use for May to October period of 12,425 feet per meter. For the other seven-month period a value of 23,320 feet has been used, making an annual use of 35,745 feet. The population ratio to live meters for the past five years is 5.2. This gives a per capita requirement of 6,780 feet for domestic cooking and hot water.

EXHIBIT 4—MAXIMUM DOMESTIC DEMAND

	24 hours ending 12-8-27	24 hours ending 2-10-29	24 hours ending 1-17-30	24 hours ending 1-18-30
Domestic rate sale (M.C.F.)	40,007	50,963	59,576	64,976
6¾% deduction for commercial	2,760	3,440	4,021	4,386
Pure domestic use	37,307	47,523	55,555	60,590
Population served	*260,000	310,000	315,000	315,000
Domestic sale per capita (cu. ft.)	144	153	176	192
Cooking and hot water	21	21	21	21
Space heat use per capita	123	132	155	171
Average temperature	24.2	20.5	13.2	9.6
Degree day deficiency	40.8	44.5	57.8	55.4
Cubic feet per capita per D.D.D.	3.02	2.97	3.00	3.08

*Metropolitan Dallas only.

*Before May convention, Natural Gas Department, American Gas Association, New Orleans.

The special features of these fittings are covered by Patent Application No. 315274, Oct. 26, 1928, series of 1925.

Method of attaching these fittings onto tubes, by means of a jig, is covered by Patent No. 1746535.

The Latest

KEY

Sectional Type Stream Line Flow

RETURN BEND

Quickly dismantled for cleaning of tubes. Has a high factor of safety.

Its design guarantees a minimum pressure drop through the return bends of approximately 25%.

Made of forged steel throughout, except the U-bend, which is made of cast steel. The U-bend is only part subjected to extreme wear, and is easily replaced. Replacement of single tubes is possible without the loss of other tubes.

Key Sectional Type Stream Line Flow Return Bends are made for all operating pressures and temperatures—and for every type of tube and pipe still.

This fitting can be adapted for very small tube centers, and it is possible to form many complicated tube layouts by the use of other special fittings belonging to this series.

Write for complete information on Key Refinery Fittings.

Modern plant equipment and skilled workmen are responsible for Key Fittings. Here is seen a wing of the Key plant, with final inspection benches in the foreground. Each individual operation of Key Fittings is thoroughly inspected before passing on to the next operation.

KEY BOILER EQUIPMENT CO.

EAST ST. LOUIS, ILLINOIS, U. S. A.

Leak Detection Work Made Permanent

Four Pittsburgh Companies Joining in Program Achieve Results So Valuable That They Decide to Keep On With It

By Dr. J. B. Garner
Director of Chemical and Engineering Research, Peoples Natural Gas Co., Pittsburgh, Pa.*

In July, 1928, a program was developed for the systematic inspection of the streets and highways in the Greater Pittsburgh district for gas leakage. Four of the public utilities—the Peoples Natural Gas Co., the Manufacturers Light & Heat Co., the Equitable Gas Co. and the Duquesne Light Co.—joined in this program.

The general survey was made and sufficient information secured to warrant all the executives in having the organization perfected as a permanent one. The following general purposes of the permanent organization were outlined: (1) To devise methods of inspection and service; (2) to inspect systematically and in accordance with the best practice all street openings for presence of any substances which are possible sources of hazard to life or property; (3) to train men for inspecting and correction service with the several participating utilities in the non-competitive districts or boroughs; (4) to co-operate with the executivve officers of the various utilities and with civic authorities in correcting existing hazards; and (5) to promote closer co-operation between the public and the utilities.

Similar Conditions in Other Cities

The conditions as found in the Greater Pittsburgh district cannot be materially different from conditions which prevail in other districts. The speaker believes that if the same program, as used in Pittsburgh, was followed in other cities the information thus obtained would be equally informative and of the same economic importance. There are no unusual conditions in Pittsburgh. All that has been learned can be applied to the operation of any natural gas transporting or distributing system. Within the past year all of the city and town plants of the Peoples Natural Gas Co., the Hope Natural Gas Co., the Columbia Natural Gas Co. and the Equitable Gas Co. have adopted and regularly used the system of inspection and correction as developed. The entire transporting system of one large company—over 400 miles in length—has been thus inspected.

Lamps of various designs have been used for many years by miners. These lamps have given warning of approaching dangers in the way of explosive mixtures of mine gases and powdered coal. The lamps are extremely sensitive to the presence of inflammable substances or gases, such as occur in mines and in natural gas. The presence of as little as 0.75 per cent of methane is indicated by a slight elongation of the flame of the lamp. The principle of the safety lamp rests upon a discovery made by Sir Humphrey Davy in 1813 "that ignited gas, or flame, is extinguished by contact with a large surface of a good conductor of heat such as copper or iron."

The lamp has a round burner which receives its supply of air from below and is provided with an internal metal spark igniter. The fuel used is naphtha or low endpoint gasoline. A sheet metal base has been devised for the use of the lamp in detecting gas leakages through the ventilators of manholes or street openings and from bar holes.

Gas Sampling Equipment

The gas sampling equipment consists of the following: (a) Bottles, narrow mouth, flint glass, 1-quart capacity; (b) rubber bulb, suction or pressure, with hard rubber check valves and rubber tubing connections; (c) aspirator tubes, copper, one-eighth inch, inserted in a No. 2 two-holed rubber stopper to fit gas sampling bottle; (d) rubber tubing, black, one-fourth inch internal diameter, 10-foot length; (e) tape measure, weighted and insulated; and (f) tags.

At the beginning of the survey work it was necessary to rely entirely upon the results of chemical analyses conducted either in the Orsat or Burrell apparatus. As the work progressed it was found that a more rapid and practical method, of as approximate character, would be necessary if the inspection work in Greater Pittsburgh was to be completed promptly and at the least expense. The experience gained thus was the basis for the development of the Garner-Miller Flamex apparatus. In standardizing the equipment, various mixtures of Pittsburgh natural gas and air were made in the laboratory and used in the apparatus for ascertaining the data in the following tabulation:

Flame length (inches)	Natural gas (per cent)
1/16	4
⅛	7
¼	16
⅜	25
½	31
⅝	37
¾	44
⅞	50
1	56
1⅛	64
1¼	71
1⅜	78
1½	86
1⅝	93
1¾	100

Analysis of Gas

The flow of gas through the apparatus is regulated by displacement with water at the rate of 214 cubic centimeters per minute. The following is the proximate analysis of the Pittsburgh natural gas supply, using the Burrell apparatus, at the time data in the above tabulation were obtained:

Carbon dioxide	0.1
Propane and higher hydrocarbons	1.3
Methane	80.0
Ethane	18.6
Total	100.0

Specific gravity (air = 1)—0.6604.
Gross heating value per cubic foot at 60° F. and 30 inches mercury—1,215 B.t.u.
Explosive limits—4.8 to 15.

It is obvious that if there should be any material changes in (a) composition of natural gas, (b) internal diameter of glass tubing for flame, and (c) rate of gas passage there would be corresponding changes in the flame lengths and flame characteristics.

The orifice well tester is used in determining small flows of gas at low pressures from street openings, faulty connections and bar holes. A small orifice has been calibrated using the Pittsburgh supply of natural gas. A calorimeter meter was used, in series with this orifice, in obtaining the following results:

Pressure tenths of inches water	Cubic feet gas 24 hours
0.1	138
0.2	181
0.3	259

Bar Hole Equipment

The bar hole equipment consists of: (a) air compressor, equipped with an air drill; (b) steel bars of various lengths; (c) bar wrench; and (d) hammer.

The matter of proper records has received careful attention. The importance of an adequate, conclusive and permanent record was realized. Local conditions have had much to do with the shaping of the content of data on the several forms.

The inspecting group is organized as follows: (a) Leader and clerk; (b) lamper, and (c) sampler. The duties of the leader are both supervisory and clerical. He directs the activities of the group and makes the record of all data on the various forms.

The lamper is equipped with a safety lamp and he precedes the others of his group along the route to be inspected. All the street openings in which there are ventilating holes are tested with the lamp. The flame in the lamp is adjusted to about one-half inch in length. The lamp is permitted to rest on the street opening for a minimum of two minutes and the results are noted. If the flame is not elongated or extinguished within two minutes time, the particular street opening is regarded as free of gas. The presence of natural gas—0.75 per cent to 3.5 per cent—will cause an elongation of flame—one-half inch to 1 inch. In an atmosphere containing more than 4 per cent natural gas, the flame will be extinguished with a flash or a "swirl"—the higher the percentage of gas the shorter the time required to extinguish the flame. The presence of more than 4 per cent of carbon dioxide—no natural gas being

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*Before May convention, Natural Gas Department, American Gas Association, New Orleans, La.

Had Natural Gas Centuries Ago

"Burning Fountain" Existed in Caesar's Time, but It Didn't Mean Anything So Far as Breakfast and the Morning Shave Went

Historians touching on the antiquity of natural gas say that in the reign of Julius Caesar, which was before the Christian era, there was a "burning fountain" of it near Grenoble, France.

But it didn't mean anything. Caesar's wife, who according to a popular notion of the day could do no wrong, couldn't do a lot of other things either. For instance, she couldn't set the coffee to percolating on the gas range in the kitchen, stick the rolls in the oven and then go back to the bedroom, dress and be ready for a piping hot breakfast with her husband.

Caesar himself was handicapped in like manner. To be sure he seems to have been a pretty fair military man and statesman in his time and he won fame by remarking, "Et tu, Brutus," when he saw that a member of the rival political crowd had got him. But Caesar couldn't set the timing device on his gas furnace in the basement at 65 before going to bed at night, knowing that on getting up he wouldn't find the hardwood floor like a cake of ice. He didn't have an instantaneous gas heater, with its assurance of hot water for his shave every morning.

In other words that burning fountain of natural gas near Grenoble for some reason did not point the way to the best and cleanest fuel the world ever has known. Even China and Japan—"backward" nations they were called—appear to have exhibited quicker appreciation of a good thing than Caesar, for the historians say that hundreds of years before he was born natural gas was used in a primitive way in those countries as a fuel and for illumination. It is said to have been transported from wells to the place of consumption through bamboo tubes and animal intestines.

The eternal fires of Baku described by Marco Polo in the thirteenth century were burning gas issuing from fissures in rocks. Pioneer missionaries in the United States found the Indians burning natural gas that flowed from seams in rocks.

Artificial Gas an Accident

Discovery of a method of making artificial gas, more commonly referred to as manufactured gas, came about by accident and more than 2,000 years after natural gas had become a subject of historical record. It was man's ceaseless quest for riches and the efforts of ancient alchemists to change the baser metals into gold that resulted in the discovery.

Recognizing the futility of his search for means of making gold out of other metals, John Baptist van Helmont of Brussels, made important contributions to chemistry in the seventeenth century. He studied and practiced medicine, later turning to chemistry and research work.

In the course of his experiments with fuels, about 1609, he discovered that they yield up what he described as a "wild spirit." He found that this "spirit" could be produced in various ways, such as by means of combustion, fermentation and the action of acids on limestone.

In writing of his experiments he said: "Seventy-two pounds of oak charcoal gave 1 pound of cinders and the 71 pounds remaining served to form the spirit Sylvester." He remarked: "There are bodies which contain this spirit, of which they are almost entirely composed and is therein fixed and solidified, and are made to leave that state by fermentation, as we observe in the fermentation of wine. This spirit, up to the present time unknown, not susceptible of being confined to vessels, nor capable of being produced in a visible body, I call by the name of gas."

Enshrouded in Mystery

Thus, at its very christening, gas was enshrouded in a veil of mystery that for many generations was to obscure it and carry the suggestion of intangibility to the superficial mind in an age of superstitions.

In fact, it was nearly 200 years after van Helmont's discovery that practical steps were taken to harness this elusive spirit and make it serve a useful purpose.

Although van Helmont recognized the existence of various gases, he perfected no way of confining them and it remained for later adventures into the realm of chemistry research to perfect methods of storing the gas after it was made, thus opening the way to its ultimate usefulness to mankind.

A few years after van Helmont made his discoveries and while other chemists were endeavoring to become acquainted with the hidden laws of nature, natural gas was discovered in various places in England. These discoveries attracted wide attention and speculation.

The earliest description of these finds is in a communication to the Royal Philosophical Society of London in 1667 by Thomas Shirley, in which he mentions

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TRENDS IN MOTOR OIL MANUFACTURE

(Continued from Page 64)

fact that the selectivity of liquid sulphur dioxide toward different hydrocarbons increases rapidly as the temperature is lowered. Aromatic and unsaturated hydrocarbons are soluble in the liquid sulphur dioxide, both at relatively high and cold temperatures, but saturated hydrocarbons and naphthenes are only slightly soluble at normal temperatures and practically not at all at 14° F. The sulphur content of oils is reported to be reduced by this method of refining as much as one-half, sometimes one-tenth.

Mechanical Contacting

An important improvement in the conventional method for treating with sulphuric acid is the substitution of mechanical contacting with acid and the centrifugal separation of the sludge. The treating time is reduced to seconds, whereas in the batch agitator often hours are required to effect the withdrawal of the sludge. The mechanical mixing of oil and acid and the centrifugal separation of the sludge insures a product of better color with smaller losses for the same quantity of acid used than in conventional agitator operation. Moreover, it is a continuous process.

Contact filtration of neutrals and bright stock is gradually replacing chemical neutralization after the acid treatment. The very finely divided earths which are used in contacting remove by absorption any free acid, particles of carbon, sludge, some chemical compounds, and, in addition, decolorizes the acid. Demulsibility is improved. Decolorization depends to a large degree upon the quantity of earth used. Some refiners prefer to partially decolorize by contacting, then dewax, and finally percolate through fuller's earth. There are other refiners who prefer to contact to the desired color before dewaxing.

The improvement in distillation methods and equipment to produce a stock more susceptible to acid treatment, and the filtering to higher colors, have contributed to the production of lubricants with more perfect demulsibility and lower carbon residue. A decided advance in contact filtration was made with the introduction of the "pulp process." This, briefly, is the application to the oil of a predetermined quantity of an earth in the muddied condition. The earth is first carefully acid treated, washed free of the reaction products and settled to approximately 30 per cent solids. The temperature of this mixture is raised, by circulation through a tube still, to a point where the maximum efficiency is obtained from the earth. Subsequently the earth is removed by filtration in an ordinary leaf-type filter. When the pulp process is employed an oil is decolorized to its finished color before passing to the dewaxing plant.

Centrifuging

A process showing considerable improvement over the cold stilling method for dewaxing lubricating oils, especially for the manufacture of high viscosity low pour test bright stocks, has been brought to a high degree of perfection during the past 10 years. This is the Sharples centrifugal process. The greatest step in the refinement of this process came with the substitution of hot water for the cold calcium chloride brine as a carrier liquid in the rotating member. Two things were accomplished. First a saving in refrigeration, and, second, the calcium soaps, formed by the contact of the oil with the calcium chloride solution, causing a slight haze, or really a lack of brightness were eliminated.

The operation of the centrifuge has always been continuous, though the chilling was a batch operation. Recent developments in connection with the manufacture of completely dewaxed lubricants, however, have resulted in a wholly continuous process. While the several steps in the application of this process may be varied, the essential principles may be illustrated in the following outline: The cylinder stock is treated with sulphuric acid, settled and the separated oil may be neutralized either chemically or by contact filtration.

This product having been diluted with naphtha is pumped into chilling towers. In the first series of these towers an exchange is effected between the incoming solution and the cold outgoing dewaxed solution. In the second, cold brine from the refrigeration equipment is circulated and in the final series, to get to the extremely low temperatures desired for complete dewaxing, direct expansion of ammonia is used. The chilled solution is then introduced into the centrifuges which are operating at 15,000 revolutions per minute where the amorphous wax is separated from the chilled solution. Both the dewaxed solution and petrolatum solution run from the machines to storage tanks, from which they are transferred to stills where the naphtha is distilled off and returned to the dewaxing plant for reuse, the finished oil remaining as residue. As there is no market for Mid-Continent petrolatum, it is customary to charge this product to the pressure stills.

A process somewhat younger than the centrifugal process is the Filter Aid Weir Process method of dewaxing cylinder stocks. In this process the chilling operation is the same as in the centrifugal process. To the chilled solution is added a predetermined quantity of diatomaceous earth and the mixture pumped into either pressure type or vacuum filters where the amorphous wax with the filter aid is retained as a cake on the leaf of the filter. The function of the earth is simply to give parocity to the cake.

Selective Solvents

The use of selective solvents for dewaxing is beginning to attract attention. A broad field for development is offered here. A brief outline of a plant designed for the dewaxing wax distillates using acetone and benzol as solvents follows: The solvent, benzol and acetone, are approximately three parts of benzol to two parts of acetone. The distillate is mixed with this solvent in the proportion of two parts of solvent to one of distillate. This mixture is then chilled to 10° F. to 15° F. and filtered in a rotary leaf filter. The cold test of the resulting products is very close to the final temperature to which the solution was chilled. The loss of solvents in this process is said to be high; in fact, economical recovery offers so difficult a problem that not many refiners have been attracted to this method for dewaxing distillates.

In view of the development of the tube still to its present stage of efficiency, indirect heat transfer as in the use of diphynl or mercury vapor scarcely seems justified. It is claimed, however, that by this method an asphalt base oil may be distilled for lubricating fractions, very light in color that requires no further treatment.

Voltol Process

A process that attracted some attention is one which is reported to raise the viscosity of lubricating oils through the action of glow-discharge of a relatively high frequency electric current, which is known as the "Voltol" process. It has been suggested that the unsaturated hydrocarbon molecule has been acted upon and polymerized so that it is increased to 10 times its original size. Voltolized oils, whether vegetable or mineral, have a peculiar odor which is characteristic of the treatment and this fact seems to indicate that it is a characteristic of the action of the glow-discharge upon the oil. Such treated oils do not change in any other property than the increased viscosity. An oil having a viscosity of 54 Saybolt at 210° F. was increased to 450 Saybolt at 210° F. by this process.

The Voltol process involves the application of a glow-discharge in a vessel which is held under a vacuum of 25 inches of mercury. The operation is conducted at a temperature of about 175° F. in an ordinary atmosphere without the introduction of hydrogen or any other foreign gas. The electricity is derived from a commercial alternating current supply converted to a single-phase high-frequency current of 4,600 volts to produce the glow-discharge. Each unit uses 23 amperes. The electric current is introduced into the oil through electrodes which revolve at the rate of 1 revolution per minute. Each converter has a capacity of approximately 300 gallons per day.

Vacuum Distillation

The manufacture, from Mid-Continent crudes, of bright stocks of higher quality as a base for compounding lubricants has been restricted to those refiners having an available supply of so-called "green" or selected crudes. With the application of vacuum distillation to topped crude, however, the picture is entirely changed and those refiners operating their plants on black crudes may now produce, as overhead products, lubricants superior in quality to residual stocks, that is to say a higher flash and fire for a given viscosity, a lower carbon residue and a flatter viscosity curve.

The refiner who contemplates the erection of a plant for processing lubricating stocks utilizing vacuum distillation, the necessary redistillation units, modern acid treating, dewaxing and filtering equipment is assured of great flexibility of operation. The accompanying charts will serve to present an idea of this flexibility.

It will be noted in the first chart that the refiner has in operation or contemplates the erection of a conventional wax plant for double-pressing wax distillate to produce zero pour neutrals. In the second diagram the operation of a wax plant is not taken into consideration.

In each instance a 90 at 210° F. viscosity vacuum reduced long residuum, has been prepared, for it has been proven that it is more economical to dewax, either centrifugally or by the filter aid process, a long residuum which may be subsequently distilled for its yields of higher viscosity neutrals and bright stocks, than to attempt to press in conventional manner, the higher viscosity neutrals.

Chart 1 outlines the operation of the plant for a complete line of neutrals ranging in viscosity from 100 to 300 at 100° F. and a conventional 150 viscosity at 210° F. bright stock. This bright stock may be blended with either the 200 or 300 at 100° F. viscosity neutral to produce lubricants of the desired specifications. It also shows the operation of the plant to produce the usual 100 and 200 at 100° F. viscosity neutrals and by charging into the solution rerun unit with the dewaxed solution, a predetermined quantity of pressed distillate, a complete line of still-blended motor oils ranging in viscosity from 50 to 90 at 210° F. may be produced. Or should it not be desired to produce bright stock the plant may be operated to produce a 100 and 200 at 100° F. viscosity neutral and a 90 at 210° F. viscosity master motor oil which may be blended off in various percentages with the 200 viscosity neutral into motor lubricants. Chart 4 does not include the operation of a wax plant but contemplates only the production of a 250 at 100° F. viscosity neutral and the conventional 150 at 210° F. viscosity bright stock, these products to be subsequently blended into motor oils. It may be added here that the operation of the vacuum distillation unit itself may be varied to produce any stock from 90 at 150 viscosity at 210° F. so that should it be desired to manufacture bright stocks alone, this could be readily done.

Performance of Oils

The performance of a lubricating oil appears to be governed by some unknown property and just what is oiliness has not been determined. Surface tension experiments indicated that interfacial tension against water of the vegetable and animal oils is much lower than in the case of a mineral oil. After considerable experimentation, Wells and Southcombe proved that the lowering of the interfacial tension against water in the case of fatty oils was due to their slight content of free fatty acids. By removing the free fatty acids from the saponifiable oils the tension rises, and by adding free fatty acids to the mineral oil the tension can be lowered. The permanency of films is dependent upon a diminished interfacial tension between the oil and the metal in contact therewith. If such a film is broken the possibility of its uniting again to form an unbroken layer depends entirely upon the interfacial tension being low. Any substance which lowers the interfacial tension causes the liquid to spread over a larger area of the solid. Hence, if a substance is added to an oil which brings about a lowering of this tension, such addition will act favorably as far as lubrication is concerned by preventing a rupture of the liquid film and preventing in turn the metals coming into direct contact.

Experiments have indicated that 1 per cent of free fatty acids of rape oil added to a mineral oil are as effective in reducing the value of the frictional coeffective as is the addition to the mineral oil of 60 per cent of neutral rape. Wells and Southcombe use the expression "germ process" to indicate the method for the preparation of a lubricating oil by the addition of small quantities of the proper fatty acids to a mineral oil.

New Type Engines

The development of higher compression engines and the rapid growth of the airplane industry have served to increase the demand for lubricants having higher viscosities, lower pourpoints and lower carbon residue. The comparison of physical characteristics of representative oils of 1925 and those for similar oils in 1930 illustrates the tendency toward higher quality.

Lubricating Oils of 1925

	Medium	Heavy
Flash	400-430	430-450
Fire	460-490	490-510
Vis. @ 100° F.	360-380	500-525
Vis. @ 210° F.	50-55	60-65
Pour	20-30	20-30
Carbon res.	0.4%-0.5%	0.7%-0.8%
Color	4½ N.P.A.	7 N.P.A.

Lubricating Oils of 1930

	Medium	Heavy
Flash	440-460	460-480
Fire	500-520	520-540
Vis. @ 100° F.	450-500	800-825
Vis. @ 210° F.	60-65	80-85
Pour	10-15	10-15
Carbon res.	0.1%-0.2%	0.5%-0.6%
Color	3 N.P.A.	6 N.P.A.

Within the past few years great progress has been made in perfecting a high grade gasoline with which to meet the ever-increasing demand of the motor industry. Similar advancement is indicated in the manufacture of lubricating oils. An effort is being made to produce lubricating oils with exceptionally low pourpoints and temperatures lower even than 0° F. have been predicted, but without doubt there is a limit to which we can go in this respect as there is a limit in producing oils which will have high viscosities at elevated temperatures. Of course the actual nature of the hydrocarbons that constitute a high grade lubricating oil will have to be determined.

The author desires to acknowledge the assistance of E. B. Harrison of the Skelly Oil Co. in the checking of the data and especially for arranging the charts.

H. L. DOHERTY HONORED

The 1930 award of the Walton Clark medal has been bestowed upon Henry L. Doherty, president of the Cities Service Co., and H. L. Doherty & Co. Mr. Doherty received the honor "in consideration of his outstanding and valuable work in the development of the manufactured gas industry," according to the announcement.

IRION COUNTY LINE

Carl G. Cromwell, independent operator at San Angelo, Tex., will lay a 2-inch line from his No. 2 Nutt, a small producer in the Gonzales School Land Survey, Irion County, to the Orient Railroad, a distance of about 2½ miles. The line will join Fox and others' line which they laid from their No. 1 Tankersley to a loading rack on the railroad. Cromwell's production will be shipped from this loading rack.

Louis Brown, Former Head of O. W. S. Co., Victim of Pneumonia

PITTSBURGH, Pa. May 2.—Louis Brown, 68, former president of the Oil Well Supply Co., and chairman of the board of directors until his retirement in January 1, 1929, died today of pneumonia in his home, 704 Amberson Avenue. Mr. Brown had just returned from a visit with his daughter, Mrs. Thomas Fleming, Jr., of Pasadena, Calif. He was stricken ill on Wednesday.

Mr. Brown was born in New York City December 22, 1861, and was educated in the public schools of Oswego, N. Y., and graduated from the high school there. He began his business career in the office of John E. White & Co., iron merchants,

Louis Brown

New York City, in 1879, and in 1881 was assigned as the representative of this country in Dresden, Germany.

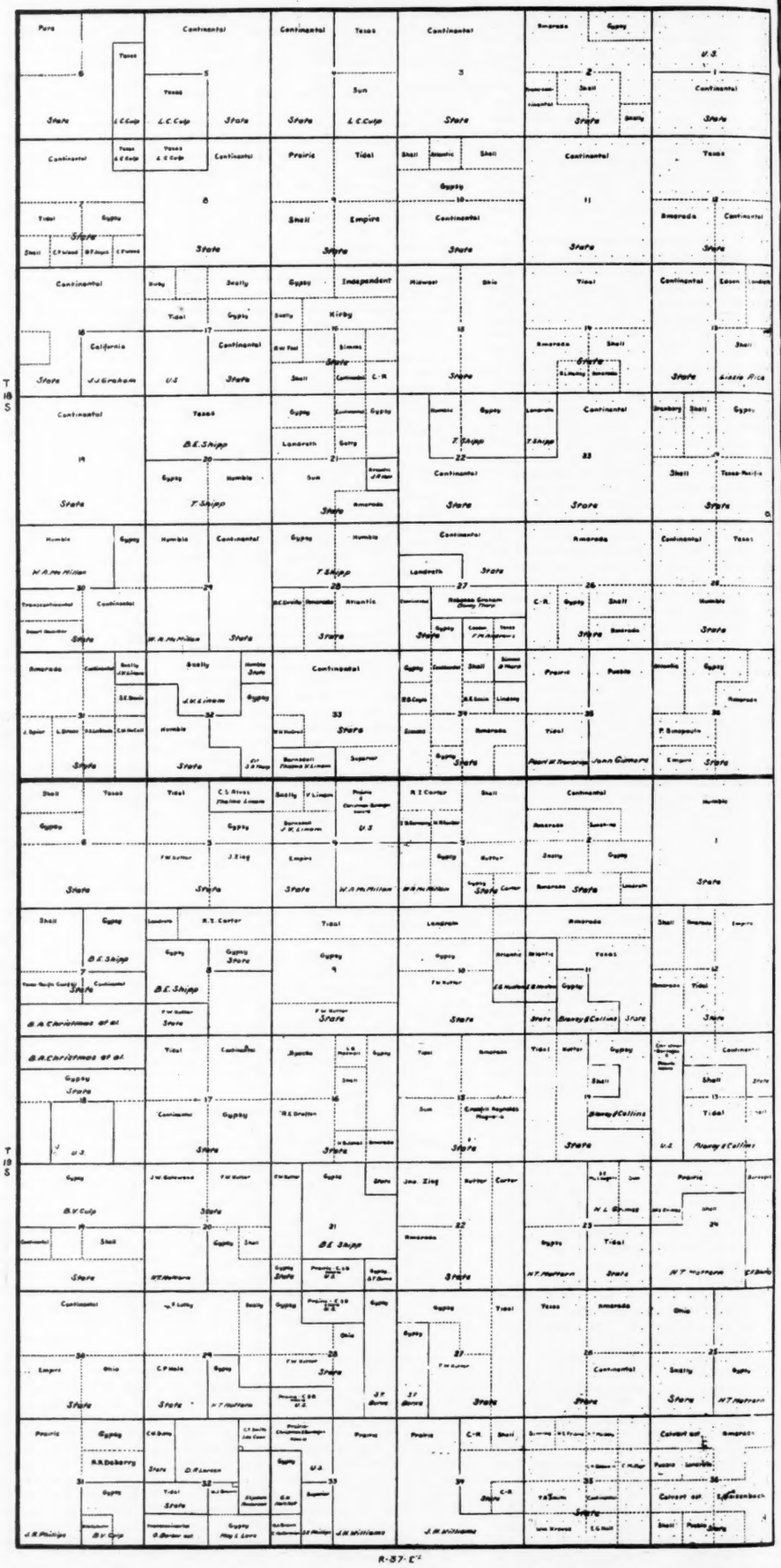
Two years later he returned to New York and worked with the H. F. Taintor & Co., manufacturers of whiting and Paris white, until 1889, when he came to Pittsburgh as assistant manager of the Pittsburgh office of the National Tube Co. He resigned from that company in 1891 and served as assistant treasurer of the Oil Well Supply Co. until 1895. He was treasurer of the company from 1895 until 1911, when he became president upon the death of John Eaton. Mr. Brown was president of the Oil Well Supply Co. for 17 years.

He was a member of the Duquesne Club, the Oakmont Country Club, the Country Club of Pittsburgh, Pittsburgh Athletic Association, the Civic Club, the Longue Vue Country Club, and the Colonial Wars Society. Besides his daughter, Mrs. Thomas Fleming, Jr., he leaves one brother, Albert Brown, of Los Angeles.

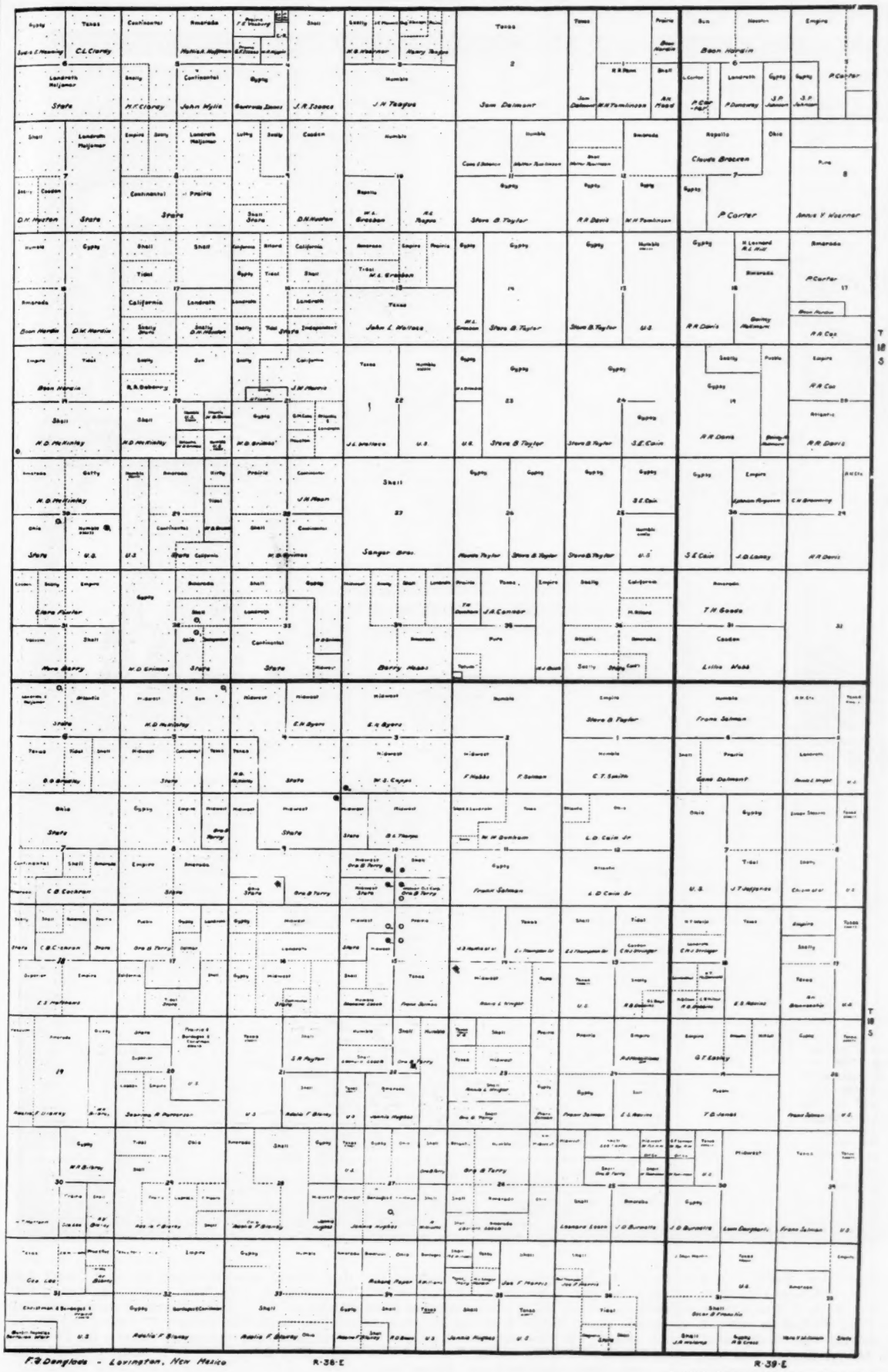
LYONS-SUPERIOR LINE

Construction of the new 8-inch natural gas pipe line from Lyons, Kans., to Superior, Neb., for the Cities Service Gas Co. has been started by the Oklahoma Constructing Co. of Dallas, Tex. Total length of the 8-inch line is approximately 116 miles. The project also includes branch lines of 40.7 miles of 4-inch, 32 miles of 3-inch and 40.2 miles of 2-inch pipe line, or a total of approximately 230 miles.

Ownership Map of the



Hobbs Area, Lea County, New Mexico



—Published through the courtesy of F. J. Danglade, Lovington, N. Mex.

Snapshots of Men in the Field

(1) Turner Lewis, pipe line engineer, Empire Pipe Line Co.; C. W. Bills, foreman, Kelly Dempsey Co.; R. J. Bryant, paint inspector. (2) C. P. Smith, Universal Oil Well Cementing Co., Oklahoma City, Okla. (3) Left to right: G. C. Parker, Parker Drilling Co., Oklahoma City, Okla., and C. H. Stoner, Fort Worth Well & Machinery Co. (4) L. C. Vancleve, superintendent, Sinclair Oil & Gas Co. gasoline plant, Oklahoma City. (5) Dan Burrus, Universal Oil Well Cementing Co., Oklahoma City. (6) Left to right: L. L. Brooks, Black, Sivalls & Bryson, Inc., San Angelo, Tex. (with this company 21 years), and Charles Gibson, Drane-Humphrey Co. (7) John G. (Smokey) Baker, Atlantic Oil Producing Co., Wink, Tex. (8) Cliff Bruce, superintendent, Atlantic Oil Producing Co., Wink, Tex. (9) S. E. (Steve) Tatum, farm boss, Kirby Petroleum Co., Big Spring, Tex., and Carl Teppie, truck driver. (10) G. B. Badgley, superintendent, Warner-Quinlan Co. of Texas.

CRUDE PRODUCTION IS LESS IN MARCH

(Continued from Page 57)

larged cracking operations are constantly reflected in increased gasoline output.

While the relationship between gasoline supply and demand for the first three months was near normal, the hoped for decline in supply which would have enabled the industry to correct the top heavy stock situation which developed the latter part of last year, has not been possible. Stocks on March 31 totaled 55,239,000 bbls., a 14.5 per cent increase over the same date last year. While this 7,015,000-bbl. increase is not as large as the 10,000,000-bbl. increase as of January 1, 1930, it does indicate that the refining industry will enter the main gasoline consuming season this month with the highest gasoline stocks on record.

On the demand side the domestic consumption the first three months was 12.6 per cent greater than the same period in 1929 and the gasoline exports are 23.1 per cent establishing a new monthly record in March when shipments to foreign buyers totaled 6,057,000 bbls. This large increase in demand which is based on shipments from refineries, natural gasoline and benzol plants if it continues will mean a yearly increase in excess of 50,000,000 bbls. for 1930 a figure that is 15,000,000 to 20,000,000 bbls. greater than was commonly predicted at the start of the year.

All factors considered the gasoline statistical situation at the end of March and the weekly reports of the American Petroleum Institute which bring the data up-to-date do not give any reason for either pessimism or undue optimism. The stocks while admittedly high can probably be materially reduced during the summer months and a strong refinery market maintained provided the crude oil situation continues in balance. Should the latter however point to excess supplies of crude oil then the heavy current output of gasoline and the large stocks would probably result in a weak market during the season in which the stocks were being liquidated.

Other Products

In the remaining refinery products, the same trends that were apparent the first two months of the year continued in March. With a decrease of 1.4 per cent in domestic demand and 9 per cent in exports the total demand for kerosene the first three months declined 621,000 bbls. or 4.4 per cent. Fortunately the total supply also decreased .4 per cent. The latter exceeded the total supply by 584,000 bbls. for the three-month period. This is less than normal for the first quarter and compares with the 1,146,000 bbls. for the first three months of last year.

The failure of the first quarter demand to meet expectations has brought a generally weak kerosene market with the dull consuming period for the year in prospect.

The March data when incorporated with January and February figures also give little cause for optimism. The total supply increased 3.1 per cent the first three months and the total demand was 5.9 per cent less. The decline in the latter is entirely due to a 17 per cent decrease in exports which normally absorb about one-third of the total output in this country. This disparity between supply and demand brought an addition to stocks of 1,293,000 bbls. the first three months. This general situation is in contrast to that existing a year ago when lubricants, especially the paraffin base products were scarce with a strong market. Now the weakness was reflected last week in an additional reduction in Pennsylvania crude oil prices from which the paraffin oils are refined.

The market observer who wonders why paraffin wax prices have reflected weakness can also secure pertinent data from a study of the March report of the government. In the face of any overproduction in effect for over a year the wax production jumped from 1,820,000 pounds daily in February to 1,978,000 pounds in March. For the same period both the domestic demand and exports of wax decreased resulting in an addition to stocks of approximately 19,000,000 pounds for March.

PRODUCTION RECORD OF HOWARD-GLASSCOCK

BIG SPRING, Tex., May 3.—Following is Umpire E. E. Andrews' statement of production in the Roberts, Settles, Phillips and Coffee Pools in Howard and Glasscock Counties, showing the number of wells, production in April and total production to May 1, 1930, of each company:

Name of company—	No of wells	April runs	Total
Amerada Pet. Co....	9	52,578	1,026,608
American Mar'bo Co.	11	30,493	1,188,561
California Co.	8	45,078	411,611
Cosden & Co.	1	882	370,581
Cranfill-Reynolds ...	2	4,313	72,441
Continental Oil Co...	22	96,958	1,581,989
F. H. E. Oil Co....	1	388	388
Green Production Co.	1	3,000	17,184
Howard C'y Oil Corp.	3	16,360	227,541
Humble O. & Ref. Co.	5	24,660	297,547
Kirby Oil Co.	4	28,760	153,322
La. Oil & Ref. Co.	2	6,814	320,157
Lyons Oil & Ref. Co.	3	16,659	102,403
Magnolia Pet. Co. ..	10	36,000	1,580,098
Merrick & Bristow ..	5	16,699	968,980
Moody-Superior	18	50,415	1,855,653
Owen-Sloan-Cosden .	6	36 114	1,605,439
Plymouth Oil Co. ..	7	38,423	657,861
Pure Oil Co.	1	.....	8,824
Schermerhorn Oil Co.	13	96,301	1,748,281
Shell Oil Corp.	7	37,657	581,055
Simms Oil Co.	4	44,025	82,297
Simms Oil & Green	1	5,652	67,341
E. L. Smith Oil Co.	2	11,997	79,475
Sprague Oil Co.	2	3,405	245,667
Sun Oil Co.	7	64,527	1,258,295
Taylor-Link Co.	2	4,194	93,544
Ward Oil Co.	4	65,418	608,781
Withers'n & Glasscock	2	7,288	175,536
Total	162	845,063	17,586,853

WILDCAT OPERATIONS IN TEXAS PANHANDLE

(Continued from Page 94)

CASTRO COUNTY

Colorado O. & R. Co.'s No. 1 Slemmons, SW cor., Sec. 73, Blk. M-17, B.S.&F. Sur. ..... Rig blown down.

Mystery Oil Co.'s No. 1 J. I. Crum, SE cor. NE, Sec. 333, Blk. M-6, S.K.&K. Sur. ..... S.D. 510 ft. for csg.

CHILDRESS COUNTY

Continental Oil Co. and Sun Oil Co.'s No. 1 Johnson, 660 ft. NE, Sec. 580, Blk. H, W.&N.W. Sur. ..... Drlg. 2,910 ft.

C. L. Sloane et al's No. 1 B. P. Smith, Sec. 49, F. P. Knott lands ..... T.D. 5,000 ft.; C.O.

COCHRAN COUNTY

Westbrook et al's No. 1 Slaughter, 400 ft. S and E, Labour 67, League 118, Knox Co. School Lands ..... Drlg. 5,250 ft.

COLLINGSWORTH COUNTY

Shoupe Bros.' No. 1 Aldus, 410 ft. N, 330 ft. E. Sec. 96, Blk. 16, H.&G.N.R.R. Sur. ..... Show oil and gas 1,678 ft; bailed estimate 10 bbls. first day from G.W. 2,194-98 ft; drlg. 2,401 ft; show wtr. 2,400-01 ft.

Shoupe Bros. No. 1 Whitson, 330 ft. N and E, SW, Sec. 33, Blk. 12, H.&G.N.R.R. Sur. ..... Spudded and S.D.

DONLEY COUNTY

Blue Bonnett Oil Co.'s No. 1 Ball, 1,075 ft. N line, 985 ft. E line, Sec. 22, Blk. E, D.&P.R.R. Sur. ..... T.D. 3,006 ft.; contract depth.

Marine Oil Co.'s No. 1 Sawyer, C SW, Sec. 5, Blk. G, G.C.&S.F. Sur. ..... S.D. 4,009 ft.

GRAY COUNTY

Adams Oil Co.'s No. 4 Morse, 330 ft. S, and W, NE cor., Sec. 3, Blk. 26, H.&G.N.R.R. Sur. ..... T.D. 2,600 ft; 600 ft. oil in hole; T.P. 2,490 ft; to shoot.

Baldridge & Lilley's No. 1 Melton, 330 ft. N and W, E½, SE, Sec. 95, Blk. B-2, H.&G.N.R.R. Sur. ..... Drlg. 1,935 ft.

Cockrell-McIlroy Oil Co.'s No. 1 Castleberry, 330 ft S and E, Sec. 126, Blk. 3, I.&G.N. Sur. ..... Drlg. 2,980 ft.

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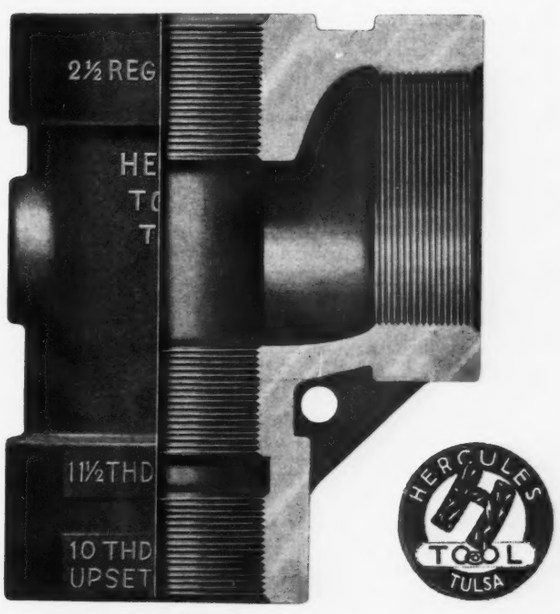

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Cockrell-McIlroy Oil Co.'s No. 1 Sailor, 330 ft. out of NW SW NE, Sec. 138, Blk. 3, I.&G.N. ..... Spudding.
Danciger O. & R. Co.'s No. 5 Morse, 330 ft. N and E, SW SW NW, Sec. 1, Blk. 26, H.&G.N.R.R. Sur. ... S.D. 2,505 ft.
Danciger O. & R. Co.'s No. 1 Shaw, 330 ft. S, 286 ft. E of E 39½ ac., NW, Sec. 5, Blk. 1, A.C.H.&B. Sur. T.D. 2,588 ft.
Dunlop's No. 4 Morse, 330 ft. N and E, SW cor. SW, Sec. 17, Blk. A-9, H.&G.N.R.R. Sur. ..... T.D. 2,684 ft; T.P. 2,606 ft; 800 ft. oil in hole.

Empire G. & F. Co.'s No. 1-B Archer, 330 ft. each way of SW cor. SW, Sec. 139, Blk. 3, I.&G.N. Sur. ..... Drlg. 2,290 ft.
Empire G. & F. Co.'s No. 2 Hexter, C SE, Sec. 235, Blk. B0Z, H.&G.N. Sur. ..... Rigging up.
Empire G. & F. Co.'s No. 1 Meer-B, 330 ft. S line, 990 ft. W line, SW, Sec. 106, Blk. 3, I.&G.N.R.R. Sur.. Drlg. 2,700 ft; 9,000,000 ft. gas 2,590-2,700 ft.

Empire G. & F. Co.'s No. 1 Shields, 330 ft. each way out of SE cor. NE, Sec. 151, Blk. 3, I.&G.N.R.R. Sur. ..... T.D. 2,554 ft.
Empire G. & F. Co.'s No. 1 Whittemore, 2,310 ft. N and W, Sec. 14, Blk. 4, I.&G.N. Sur. ..... Location.
Follett Pet. Corp.'s No. 1 Hood, 330 ft. S and W of W 80 ac., SW, Sec. 32, Blk. 3, H.&G.N.R.R. Sur. ..... T.D. 3,143 ft; C.O. after shot.
Gardner Bros. and Collins' No. 2 Saunders, 955 ft. S, 330 ft. E of W 68 ac., E½, J. G. Eustice Sur. ..... Location.
Gulf Prod. Co.'s No. 2 Combs et al, 990 ft. N, 330 ft. W, SE cor., Sec. 38, Blk. 3, I.&G.N.R.R. Sur. ..... Drlg. 2,505 ft.
Humble O. & R. Co.'s No. 2 Combs-Worley, 240 ft. W line, 330 ft. N line, N½ SE, Sec. 36, Blk. 3, I.&G. N.R.R. Sur. ..... Drlg. 2,677 ft; S.G. 2,395 ft.
Humble O. & R. Co.'s No. 1 Young, C SW, Sec. 110, Blk. 3, I.&G.N. Sur. ..... Rig.

LeFore Pet. Corp.'s No. 1 Wilson, 330 ft. N and E, Sec. 1, B.S.&F. Sur. ..... Spudding.
Lenix et al's No. 1 Bradford, 330 ft. N and E, W½ SE, Sec. 118, Blk. B-2, H.&G.N.R.R. Sur. ..... Drlg. 2,040 ft.
Lyon et al's No. 1-A Morse, 330 ft. S and W, NW NW, Sec. 1, Blk. 26, H.&G.N.R.R. Sur. ..... Spudding.
Jean Pet. Co.'s No. 1 Furneaux Bros., 330 ft. N and W cor. SE, Sec. 200, Blk. B-2, H.&T.N. Sur. ..... S.D. 1,260 ft.
Magnolia Pet. Co.'s No. 1 Cubine, 330 ft. N and W, NE, Sec. 36, Blk. 25, H.&G.N.R.R. Sur. ..... 9,000,000 ft. gas 2,325-35 ft; T.D. 2,775 ft; to shoot.

Magnolia Pet. Co.'s No. 5 Magnolia, 990 ft. N, 330 ft. E, SW cor., Sec. 14, Blk. 3, I.&G.N.R.R. Sur. ..... S.D. 2,480 ft.
McAuley et al's No. 4 Morse, 330 ft. N and W, SE cor. NE, Sec. 2, Blk. 26, H.&G.N.R.R. Sur. ..... Rig.
McIlroy Oil Co.'s No. 1 Vallmert, 330 ft. each way out of SE cor., NW, Sec. 140, Blk. 3, I.&G.N. Sur. ..... Drlg. 1,750 ft.
Oil Operators' No. 1 Bowers, 330 ft. N, 330 ft. E. Sec. 93, Blk. B-2, H.&G.N. Sur. ..... Show oil and gas 2,400-17 ft.; S.O. 3,036-55 ft.; first gas 2,483 ft., increase at 2,500 ft., 2,544 ft. and 2,950 ft.; S.D. 3,090 ft.

Prairie O. & G. Co.'s No. 2 Laugham, 350 ft. S and E, NW cor., W 230.3 ac. of S 310.5 ac., Sec. 1, Blk. B-2, H.&G.N. Sur. ..... S.D. 2,835 ft; flowing 165 bbls. oil daily; T.P. 2,742 ft.

Prairie O. & G. Co.'s No. 1 Worley, 330 ft. each way out of NW cor. NW, Sec. 36, Blk. 3, I.&G.N.R.R. Sur... S.D. 2,783 ft.
Prairie O. & G. Co.'s No. 2 Worley, 330 ft. each way out of NE cor. NW, Sec. 36, Blk. 3, I.&G.N. Sur. ..... Drlg. 2,775 ft; S.G. 2,620 ft.
Prairie O. & G. Co.'s No. 3 Worley, 330 ft. each way out of SE cor. NW, Sec. 36, Blk. 3, I.&G.N.R.R. Sur..... Drlg. 2,631 ft; S.G. 2,284 ft. and 2,312 ft.

Saulsbury et al's No. 1 Sheridan, 330 ft. S and E, W½ NE, Sec. 184, Blk. B-2, H.&G.N. Sur. ..... Moving in tools.
W. A. Scott's No. 1 Cobb, 330 ft. S, 425 ft. W, N½ SE, Sec. 184, Blk. 3, I.&G.N. Sur. ..... Rigging up.
So. Pet. Expltn. Co.'s No. 1 Vaughn, 330 ft. N and W, SW, Sec. 138, Blk. 3, I.&G.N. Sur. ..... Running csg; T.D. 490 ft.
Reynolds et al's No. 1 Webb, 330 ft. N, 380 ft. E, NW, Sec. 60, Blk. 25, H.&G.N.R.R. Sur. ..... Fishing 2,370 ft.
Rieger & Steckoll's No. 1 Bohr, 330 ft. S and E, Sec. 37, Blk. B-3, H.&G.N. Sur. ..... S.D. 3,509 ft.
Stover and Shell's No. 1 Saunders, 990 ft. N, 330 ft. E. N 100 ac. of W 149 ac., Sec. 3, B.&B. Sur. ..... 2,000,000 ft. gas 2,670-75 ft.; T.D. 2,956 ft.; shot 60 qts.; no results; C.O.

Sun Oil Co.'s No. 1 Combs-Worley, 330 ft. each way, SW cor. SE, Sec. 35, Blk. 3, I.&G.N. Sur. ..... S.G. 2,175 ft; fishing 2,820 ft; 15,000,000 ft. gas 2,807-40 ft.

Vulcan O. & G. Co.'s No. 1 Carpenter, 330 ft. N and W, W 80 ac., NW, Sec. 25, Blk. 25, H.&G.N.R.R. Sur. ..... S.D. 2,250 ft.
Wilson et al's No. 1 Heaston, 330 ft. S and W, Sec. 160, Blk. B-2, H.&G.N.R.R. Sur. ..... S.D. 1,025 ft.
Wright Wilson, trustee's No. 1 Chapman, 175 ft. S and E lines, N½ NW, Sec. 69, Blk. 25, H.&G.N. Sur..... S.O. 2,685 ft.; S.D. 2,800 ft.

HARTLEY COUNTY

Dana O. & G. Co.'s No. 1 Fritz, C NE, Sec. 81, Blk. 44, H.&T.C.R.R. Sur. ..... Drlg. 3,665 ft; top gas 3,515 ft; 12,000,000 ft. gas 3,565 ft.

HUTCHINSON COUNTY

Alamosa Oil Co.'s No. 4 Sanford, 310 ft. S, 320 ft. W, NE cor. N 160 ac., S 240 ac., Sec. 85, Blk. 46, H. &T.C. Sur. ..... S.O. and wtr. 3,010-11 ft.; S.D. 3,095 ft.

Alexander et al s No. 1 Johnson, 1,709 ft. E, 330 ft. N, N 80 ac., E½, E. T. Tomlinson Sur. ..... Drlg. 2,875 ft.
Continental Oil Co.'s No. 1 Johnson-E, 330 ft. N and E, SW cor. SE, Sec. 5, Blk. I, B.&B. Sur. ..... Drlg. 3,220 ft.
Danciger O. & R. Co.'s No. 1 Cheatham, 330 ft. N and E, SW SE, Sec. 38, Blk. Y, A.&B. Sur. ..... S.D. 2,450 ft.
Danciger O. & R. Co.'s No. 3 Moore, 330 ft. S and E, NW W½ SE, Sec. 125, Blk. 4, I.&G.N.R.R. Sur. ..... 1,000 ft. oil in hole 3,003-20 ft.; S.D. 3,030 ft.

Danciger O. & R. Co.'s No. 4 Moore, 330 ft. N and E, SW cor. W½ SE, Sec. 125, Blk. 4, I.&G.N.R.R. Sur.. Rigging up standard tools; T.D. 2,825 ft.

Dixon Creek Oil Co.'s No. 2 Cheatham, 330 ft. N, 1,650 ft. W, SE cor. N½ SE, Sec. 38, Blk. Y ..... U.R. 8-in. csg. 2,820 ft.

Dixon Creek Oil Co.'s No. 1 Johnson Bros., 50 ft. S, 330 ft. W, NE cor. E 80 ac., J. Gammon Sur. ..... Drlg. 3,001 ft.
Huey et al's No. 3 Smith et al, 330 ft. N, 660 ft. W, S 40 ac., E 100 ac., SE, Sec. 12, Blk. Y ..... S.D. 2,702 ft.
Midwest Expltn. Co.'s No. 1-B Garner et al, 330 ft. N, 990 ft. W, Sec. 124, Blk. 4, I.&G.N.R.R. Sur. ..... Drlg. 2,385 ft.
Phillips Pet. Co.'s No. 2 Cheatham, 330 ft. S and E, NW cor. SE SE, Sec. 38, Blk. Y ..... T.D. 3,065 ft; T.P. 3,057 ft; 20 bbls. per hr. first 24 hrs.

Phillips Pet. Co.'s No. 1 Johnson-Burl, 330 ft. S and W, NE cor. W 240 ac., N 320 ac., Sec. 4, Blk. 1, B.&B. Sur. ..... Drlg. 2,900 ft.
Phillips Pet. Co.'s No. 1 Johnson-Juanita, 330 ft. N and W, SE cor. W½, Sec. 5, Blk. I, B.&B. Sur. ..... T.D. 3,221 ft; T.P. 3,218 ft; I.P. 50 bbls.

Phillips Pet. Co.'s No. 1 Johnson-Trammel, 930 ft. N, 330 ft. W, SE cor. W½ NW, Sec. 38, Blk. Y ..... S.O. 3,060 ft; drlg. 3,250 ft.
Phillips Pet. Co.'s No. 1 Johnson-Mayer, 990 ft. N and 990 ft. W line, NE, Sec. 37, Blk. Y, A.&B. Sur. ..... S.D. 2,955 ft.
Phillips Pet. Co.'s No. 1 Johnson-Royal, 330 ft. S and E, NW cor. E½ NW, Sec. 34, Blk. Y ..... Drlg. 3,003 ft; S.O. 2,994 ft.
Phillips Pet. Co.'s No. 1 Johnson-Rudy, 330 ft. W, 330 ft. S. SW SW, Sec. 30, Blk. Y, A.&B. Sur. ..... Drlg. 2,620 ft.
Phillips Pet. Co.'s No. 1 Vake (Hazel), 330 ft. N and W, Sec. 4, Blk. XO2, H.O.&B. Sur. ..... Spudded.

Spurlock et al's No. 1-A Christian, 440 ft. S, 330 ft. W, NE cor. SE SE, Sec. 33, Blk. Y ..... Fishing 2,225 ft.
The Texas Company's No. 5 Moore, 330 ft. N and W, SE cor. SW, Sec. 125, Blk. 4, I.&G.N.R.R. Sur. ..... T.D. 3,025 ft; T.P. 2,925 ft; I.P. 75 bbls.

Texarado Oil Co.'s No. 2 Stanford, 330 ft. S, 990 ft. W, NE cor. N 80 ac., S 160 ac., Sec. 83, Blk. 46, H.& T.C.R.R. Sur. ..... S.D. 2,910 ft.
Texas State Oil Co.'s No. 1 Dunaway, 330 ft. S and W, NE, Sec. 5, Blk. 2-Y, T.T.&R.R. Sur. ..... Location.

LAMB COUNTY

Graham O. & G. Co. et al's No. 1 Ellwood, CWL, Sec. 9, Blk. T, T. A. Thompson Sur. ..... S.D. 4,408 ft.

LIPSCOMB COUNTY

Brown et al's No. 1 Box T Ranch, SW NE, Sec. 612, H.&T.C. Sur. ..... S.G. 3,760 ft; drlg. 3,885 ft.
Okla. Public Service Co.'s No. 1 C. W. Jones, NE SW, Sec. 100, H.&T.C. Sur. ..... Fishing 4,954 ft.

LUBBOCK COUNTY

Center Oil Co.'s No. 1 Bowles Ranch ..... Small S.O. 1,133-40 ft.; S.D. 4,167 ft.

MOORE COUNTY

Delmar Oil Co.'s No. 1 Jones, 990 ft E, 330 ft. N, NW, Sec. 171, Blk. 3-T, T.&N.O. Sur. ..... Location.
Fritch O. & G. Co.'s No. 1 Lee Bivins, C N 40 ac., N 160 ac., Sec. 4, George Mahan Sur. ..... 2,000,000 ft. gas 1,550-65 ft.; T.D. 3,212 ft.; S.O. 3,188 ft.; shot 40 qts. from 3,182-3,202 ft.; no results; S.D.

Gulf Prod. Co.'s No. 1 Kilgore, C SW, Sec. 22, Blk. P.Mc., E.L.R.R. Sur. ..... Gas; S.D. 3,424 ft; estimated 15,000,000 ft. 3,050-60 ft.

Red River Gas Co.'s No. 1 J. M. Shelton, 330 ft. each way from SE cor., Sec. 52, Blk. 3, G.&M. Sur. ..... S.D. 3,080 ft.
Shamrock O. & G. Co.'s No. 1 Shory, 330 ft. N and W, NE, Sec. 187, Blk. 3-T, T.&N.O. Sur. ..... Location.

MOTLEY COUNTY

Explin. Co.'s No. 6 Matador, 330 ft. N line, 330 ft. E line, Sec. 132, Blk. M ..... S.D. 4,011 ft.
Matador Oil Corp.'s No. 1 Owens, C NE, Sec. 10, Blk. G, B.&B. Sur. ..... S.D. 580 ft.

POTTER COUNTY

Canadian River Gas Co.'s No. 1-N Masterson, 330 ft. E. 1,320 ft. S, Sec. 17, Blk. 3, G.&M.R.R. Sur. ..... Drlg. 2,240 ft.

RANDALL COUNTY

W. A. Patterson s No. 1 Palo Duro, Sec. 60, Blk. K-14 S.D. 1,250 ft.
Texas Interstate P. L. Co.'s No. 1 Masterson, C, Sec. 37, Blk. B-10, E.L.R.R. Sur. ..... Location.

ROBERTS COUNTY

Big Bend Oil Co.'s No. 1 Ledrick, Sec. 7, Blk. A-5 ..... Shot 10 qts. 5,270-93 ft.; S.O. 5,288 ft.; S.D. 5,992 ft.

WHEELER COUNTY

Dunaway Bros.' No. 1 Worley, 330 ft. S and W, NE cor. NW, Sec. 39, Blk. 24, H.&G.N.R.R. Sur. ..... T.D. 2,120 ft.; 5,000,000 ft. gas 2,025-35 ft.

Four Leaf Drlg. Co.'s No. 1 Jackson, 330 ft. S and W, NE, Sec. 11, Blk. 27, H.&G.N. Sur. ..... Running 8¼-in. csg.; T.D. 1,290 ft.
Johnson et al's No. 2 Hicks, 890 ft. W, 990 ft. S, Sec. 49, Blk. 17, H.&G.N. Sur. ..... Spudded and S.D.
Lone Star Gas Co.'s No. 1 Brown, C NW NE, Sec. 53, Blk. 23, H.&G.N.R.R. Sur. ..... Location.
Lone Star Gas Co.'s No. 2 Hicks (Martin), C NW NE, Sec. 52, Blk. 17, H.&G.N.R.R. Sur. ..... Location.
Lone Star Gas Co.'s No. 1 Nickell, C NW NW, Sec. 64, Blk. 17, H.&G.N.R.R. Sur. ..... Rigging up.
Lone Star Gas Co.'s No. 1 Ridinger, C NW NW, Sec. 65, Blk. 17, H.&G.N. Sur. ..... Rig on ground.
Murchison & Fain's No. 1 Parsons, 1,980 ft. W, 1,195 ft. N, Sec. 53, Blk. 23, H.&G.N. Sur. ..... Drlg. 910 ft.
Prince & Adams' No. 2 Burcham, C NE NE, Sec. 89, Blk. 17, H.&G.N.R.R. Sur. ..... Drlg. 1,780 ft.
Upham Gas Co.'s No. 1 Fee, 660 ft. S, 330 ft. W, W½ SW SE, Sec. 74, Blk. 17, H.&G.N. Sur. ..... S.D. 1,325 ft.
Upham Gas Co.'s No. 1 Hoshor, C SE SW, Sec. 69, Blk. 17, H.&G.N. Sur. ..... Location.
Wischkamper et al's No. 2 Brown, C SE NE, Sec. 53, Blk. 23, H.&G.N.R.R. Sur. ..... S.D. 1,200 ft.

WILDCAT OPERATIONS IN WEST TEXAS

(Continued from Page 93)

BREWSTER COUNTY

Brewster Oil Co.'s No. 1 fee, 2,640 ft. S and 7[illegible]98 ft. E of NW cor., Sec. 45, Blk. G-15, G.C.&S.F. Sur. ..... Shut down 1,935 ft.
E. L. Chapman's No. 1 Skinner, C SW SE, S[illegible]. 100, Blk. 2, G.C.&S.F. Sur. ..... Shut down 1,250 ft.; hole full water 1,135-85 ft.

Trans-Pecos Oil & Gas Co.'s No. 1 Jones, 920 ft. from N and 2,500 ft. from E of Sec. 18, Blk. G-15, G.C.&S.F. R.R. Sur. ..... Show oil 1,830 ft.; shut down 2,137 ft.

Van McPhail's No. 1 McIntyre, SE cor., Sec. 59, Blk. 352, 7 mi. S of Alpine ..... Shut down 1,750 ft.

COKE COUNTY

Arkansas Fuel Oil Co.'s No. 1 Stepp, 1,020 ft. NE, 2,340 ft. W of SE cor., Sec. 35, Blk. 1-A, H.&T.C. Sur. ..... Drlg. 1,310 ft.
Cates & Fitzhugh's No. 1 Mimms, 660 ft. N and W of SE cor., Sec. 39, Blk. W, T.&P.R.R. Sur. ..... Location.
Lipan Oil Co.'s No. 1 E. C. Rawlings, Sec. 390, Blk. 1-A, H.&T.C. Sur., elev. 2,750 ft. ..... Shut down 3,050 ft.

CONCHO COUNTY

Duffy et al's No. 1 Callan, 1,520 ft. N and 1,120 ft. W of SE cor., Sec. 21, Blk. 10, H.&T.C.R.R. Sur. ..... Spudded and shut down.
Turner et al's No. 1 Borsig, 150 ft. from S of NE cor., G. Emmig Sur. 130, 6 mi. W of Paint Rock ..... Shut down 735 ft.

CRANE COUNTY

Cranfill et al's No. 1 Tubb, 2,310 ft. from N and 330 ft. from E of Sec. 8, Blk. B-27, Public School Land ..... Top salt 505 ft.; drlg. 2,420 ft.
C. C. Duffey's No. 1 Cowden Bros., 1,280 ft. from W and 660 ft. from S of Sec. 31, Blk. 2, E.&T.C. Sur. ... Tools.
Duffey et al's No. 3 Cowden Bros. et al, 2,232 ft. from W line and 200 ft. from S line, Sec. 18, Blk. X ..... Drlg. 670 ft.

CROCKETT COUNTY

California Co.'s No. 2 Shannon, Lease No. 3. 258 ft. N and 2,997 ft. E of Sec. 42, T.C.R.R. Sur. ..... Drlg. 2,428 ft.
Doleman & Moore's No. 1 Perner, 3,135 ft. from N and 1,485 ft. from E of Sec. 36, Blk. 2, I.&G.N. Sur. ..... Machine.
Lewis & Daniels' No. 1 Pecos River bed, 19 yds. S and 37° E of NW cor., Sec. 33, Blk. 1, I.&G.N. Sur. ..... Shut down 1,407 ft.
Magnolia Pet. Co.'s No. 1 Hoover, 2,310 ft. from N and 330 ft. from E of Sec. 12, Blk. 1, G.C.&S.F.R.R. Sur.. Top salt 660 ft.; show gas 1,868-1,950 ft.; 1 gal. oil per hr. from 2,205-10 ft.; shut down 2,963 ft.

Trans-Texas Oil Co.'s No. 2 Shannon, 983 ft. from S and 1,873 ft. from E line of Sec. 42, T.C.R.R. Sur..... Top salt 1,235 ft.; shut down 2,230 ft.

CULBERSON COUNTY

Grisham & Hunter Corp.'s No. 1 Garren, 2,310 ft. from S and 330 ft. from E of Sec. 18, Blk. 89, P.S.L. Sur. .... Drlg. 2,065 ft.
Hickey & Stiver's No. 1 C. O. Finley, 600 ft. N and 1,980 ft. W, Sec. 20, Blk. 82 ..... Small show oil 1,331 ft.; shut down 2,895 ft.

Kornrumpf et al's No. 1 Garren, 330 ft. S and W, Sec. 15, Blk. 79, Public School Land ..... Spudded and shut down.

West Coast Oil & Exploration Co.'s No. 1 McGregor, C NW, Sec. 14, Blk. 81 ... Slight show oil 740 ft.; shut down 875 ft.; may abandon.

Scott & Dittman's No. 1 Miller, 1,160 ft. N and 2,480 ft. E. Sec. 1, Blk. 97, Public School Land ... Oil show 2,528 ft.; shut down 3,508 ft.

ECTOR COUNTY

Amerada and Skelly's No. 1-B University, 990 ft. from S and 440 ft. from E line, Sec. 2, Blk. 35, University Land ... Underreaming 10-in. casing; total depth 765 ft.

Cosden Oil Co.'s No. 2-A University, NE cor. S half NE, Sec. 1, Blk. 35, University Land ... Drlg. 3,595 ft.

Cosden Oil Co.'s No. 2 University-B, 2,310 ft. S and 440 ft. W of NE cor. of Sec. 2, Blk. 35, University Land ... Drlg. 2,225 ft.

C. P. Davis et al's No. 1 Hendricks, C SW Sec. 46, Blk. 42, Twp. 2s, T.&P.R.R. Sur. ... Drlg. 2,475 ft.

Gibson & Johnson's No. 1 Scharbauer, 990 ft. from N and E of Sec. 4, Blk. B-15, Public School Land ... Drlg. 3,765 ft.

Gulf Prod. Co.'s No. 1 Kloh-G, 330 ft. N and 440 ft. E of SW cor., Sec. 5, Blk. 44, Twp. 3s, T.&P. Sur. ... Drlg. 3,565 ft.

Gulf Prod. Co.'s No. 2 State, 330 ft. S and 440 ft. W of NE cor. S 160 acres, Sec. 1, Blk. 35, University Land ... Drlg. 2,925 ft.

Gulf Prod. Co.'s No. 2 State-A, 330 ft. N and 440 ft. W of SE cor. N half S half, Sec. 2, Blk. 35, University ... Drlg. 2,035 ft.

Humble Oil & Ref. Co.'s No. 5-D Kloh-Rumsey, 1,674 ft. S and 440 ft. E of NW cor., Sec. 7, Blk. 44, Twp. 3s, T.&P. Sur. ... Total depth 3,786 ft.; top pay 3,678 ft.; flowing by heads.

Humble Oil & Ref. Co.'s No. 7-D Kloh et al, 330 ft. from N and 440 ft. from W of Sec. 7, Twp. 3s, Blk. 44, T.&P. Sur. ... Drlg. 3,675 ft.

Humble Oil & Ref. Co.'s No. 8 Kloh-D, 986 ft. N and 440 ft. E of SW cor., Sec. 7, Twp. 3s, Blk. 44, T.&P. Sur. ... Drlg. 1,265 ft.

Humble et al's No. 4 York, 323 ft. S and 440 ft. E of NW cor., Sec. 16, Blk. 44, Twp. 3s ... Drlg. 3,710 ft.; top pay 3,605 ft.; flowed 278 bbls.

Humble Oil & Ref. Co.'s No. 7 York, 1,650 ft. N and 440 ft. E of SW cor., Sec. 16, Blk. 44, Twp. 3s ... Drlg. 960 ft.

Independent Oil & Gas Co.'s No. 1 Eldson, 1,250 ft. S and 2,144 ft. E of NW cor., Sec. 6, Blk. 44, Twp. 3s, T.&P. Sur. ... Drlg. 3,445 ft.

H. F. Wurtz' No. 1 E. A. Ibbetson et al, 330 ft. from N and E lines of NW, Sec. 16, Blk. 46, Twp. 3s, G.M.M.Br.&A. Sur. ... Spudded and shut down 30 ft.

T. P. Coal & Oil Co.'s No. 1 McKenzie, 1,650 ft. from S and 330 ft. from E of Sec. 28, Blk. 45, Twp. 2s, T.&P. Sur. ... Drlg. 3,410 ft.

Transcontinental Oil Co.'s No. 1 University, 1,650 ft. from N and 440 ft. from E line of Sec. 3, Blk. 35, University Land ... Shut down 870 ft.

R. R. Penn et al's No. 1 Goodman et al, 2,640 ft. N and 330 ft. W of SE cor. Sec. 27, Blk. 44, T.&P.R.R. Sur. Building derrick.

Shell Pet. Corp.'s No. 1 Jones, Sec. 6, Blk. 44, Twp. 3s, T.&P.R.R. Sur. ... Shut down 3,760 ft.; top pay 3,615 ft.; shot; doubled production.

Skelly Oil Co.'s No. 2-A University, 330 ft. S and 440 ft. W of NE cor., Sec. 1, Blk. 35, University Land ... Shut down 3,440 ft.

Skelly Oil Co. and Republic Prod. Co.'s No. 1 McKenzie, 990 ft. from S line and 330 ft. from E line of Sec. 28, Blk. 45, Twp. 2s, T.&P. Sur. ... Drlg. 200 ft.

Sunray Oil Co. et al's No. 1 Jones, 2,320 ft. from N and 440 ft. from E of Sec. 6, Blk. 44, Twp. 3s, T.&P. Sur. ... Location.

The Texas Company's No. 7 Connell, 2,310 ft. from S and 440 ft. from W, Sec. 1, Blk. B-16, Public School Land ... Drlg. 2,320 ft.

EL PASO COUNTY

Lane-The Texas Company's No. 1 Malone, 2,140 ft. from SW and NW of Sec. 46, J. M. Day Sur. ... Drlg. 1,719 ft.

FISHER COUNTY

Cranfill & Reynolds' No. 1 Johnson, 440 ft. from N and 1,540 ft. from W of Sec. 3, Blk. R, Richardson Sur. ... Drlg. 3,140 ft.

Cranfill & Reynolds' No. 2 Willingham, 330 ft. from N and E of NW, Sec. 199, B.B.B.&C.R.R. Sur. ... Drlg. 1,875 ft.

Cranfill & Reynolds' No. 2 Barrett, 330 ft. from N and W of NE, Sec. 199, B.B.B.&C. Sur. ... Rig on ground.

Cranfill & Reynolds' No. 1 Flannigan, 330 ft. from S and E, Sec. 200, B.B.B.&C. Sur. ... Rig on ground.

Mid-West's No. 1 Decker, 330 ft. from S and W of W 80 ac. of N 160, Sec. 8, Richardson Sur. ... Location.

Roeser & Pendleton's No. 1 Steele, 660 ft. from N and 440 ft. from W of N half of SW, Sec. 210, B.B.B.&C. Sur. ... Location.

GAINES COUNTY

Humble Oil Ref. Co.'s No. 1 Carswell, 660 ft. S and E of NW cor. of Sec. 23, Blk. A-27, Public School Land ... Drlg. 825 ft.

GARZA COUNTY

Pandem Oil Corp.'s No. 1 Justice, 330 ft. from S and W of Sec. 12, Blk. 6, H.&G.N. Sur. ... Location.

GLASSCOCK COUNTY

California Co.'s No. 1 Baker, 2,310 ft. from S and 990 ft. from W, Sec. 23, Twp. 2s, Blk. 33, T.&P. Sur. ... Top pay 2,238 ft.; increase 2,262 ft.; total depth 2,297 ft.; pumped 640 bbls. in 24 hrs., may deepen.

California Co.'s No. 1 Jones, 330 ft. S from N and E lines, Sec. 25, Blk. 33, Twp. 2s, T.&P. Sur. ... Fishing 2,050 ft.

F. H. E. Oil Co.'s No. 1 Cox, 330 ft. from S and E of SW, Sec. 8, Blk. 33, Twp. 2s, T.&P. Sur. ... Drlg. 3,250 ft.

Kirby Pet. Co. et al's No. 2 Phillips, 990 ft. S and 2,310 ft. E of NW cor., Sec. 23, Blk. 33, Twp. 2s, T.&P. R.R. Sur. ... Drlg. 800 ft.

Kirby Pet. Co. et al's No. 3 Phillips, 1,650 ft. S and 2,310 ft. E of NW cor., Sec. 23, Blk. 33, Twp. 2s, T.&P.R.R. Sur. ... Drlg. 1,100 ft.

Shell Pet. Corp.'s No. 1 Phillips, 1,650 ft. S and 2,310 ft. W of NE cor., Sec. 23, Blk. 33, Twp. 2s, T.&P.R.R. Sur. ... Show oil 1,374-1,414 ft.; drlg. 1,806

Timberlake & Snyder's No. 1 Meek, 2,310 ft. W and 1,600 ft. N of SE cor., Sec. 7, Blk. 34, Twp. 3s, T.P. Sur. ... Show oil 970 ft.; drlg. 2,850 ft.

World Oil Co.'s No. 3-C McDowell, 2,310 ft. from S and W of NE cor., Sec. 21, Blk. 34, Twp. 2s, T.&P. Sur. ... Location.

World Oil Co.'s No. 1 Edwards, 330 ft. from S line and 2,310 ft. from W line of Sec. 13, Blk. 34, Twp. 2s, T.&P. Sur. ... Rig.

HOWARD COUNTY

Cosden Oil Co.'s No. 6 Roberts-A, 200 ft. N and E of SW cor., Sec. 129, Blk. 29, W.&N.W.R.R. Sur. ... Sulphur water 1,433-46 ft.; shut down 1,456 ft.

McGinley-Sigler's No. 1 Hyman-C, 330 ft. N and 990 ft. W SE cor., Sec. 93, Blk. 29, W.&N.W.R.R. Sur. ... Location.

Merriwether's No. 1 Smith, 150 ft. from S, 2,490 ft. from W, Sec. 45, Blk. 33 ... Shut down 2,465 ft.

Moody Oil Corp.'s No. 23-B Roberts, 990 ft. from N and W of Sec. 137, Blk. 29 ... Set 10-in. casing; shut down 261 ft.

Sinclair O. & G. Co.'s No. 1 Montgomery et al, 2,310 ft. from N and W of Sec. 11, Blk. 30, Twp. 1s, T.&P. Sur. ... Drlg. 560 ft.

HUDSPETH COUNTY

California Co.'s No. 1 University, 3,821 ft. N and 2,554 ft. E of SW cor., Sec. 19, Blk. E ... Slight oil show 4,021-23 ft.; drlg 4,446 ft.

Western States Oil Co.'s No. 1 Moore, C SE, Sec. 16, Blk. 71, Twp. 6, T.&P. Sur. ... Shut down 2,760 ft.

Western States Oil Co.'s No. 1 Gardner & Moseley, NE NW, Sec. 12, Blk. 18 ... Fishing 3,155 ft.

IRION COUNTY

Crawford Oil Co.'s No. 1 Williams, 450 ft. from N, 150 ft. from W, Subd. 8 ... Shut down 1,105 ft.

Cromwell's No. 2 Nutt, 504 ft. from N and 1,162 ft. from W of Subd. 6, Gonzales County School Land ... Top pay 1,451 ft.; total depth 1,452 ft.; 600 ft. oil in hole.

Glenn et al's No. 1 Tankersley, NW cor. SW, Sec. 4, G.C.&S.F.R.R. Sur. ... Location.

Kingwood Oil Co. et al's No. 1 J. D. Suggs, SE NW SE, Sec. 19, Blk. 7, H.&T.C. Sur. ... Show gas 7,656 ft.; encountered 2,400 ft. sulphur water 7,818 ft.; plugged back to 6,700 ft.; cleaning out; swabs 3 bbls. oil daily.

P. H. Williams' No. 1 Ash, C of Sec. 20, Washington County ... Show oil 7,931 ft.; shut down 8,880 ft.

Straughan and Texannati Oil Co.'s No. 1 Nutt, 150 ft. N and E of NW NW, Blk. 6, Gonzales County School Land ... Shut down 205 ft.

JONES COUNTY

Mid-Tex Oil Co.'s No. 1 King, 330 ft. E of river and 800 ft. S of N line, Subd. 1, Sec. 197, M. Bueno Sur. ... Topped sand 1,980 ft.; plugged back to 1,968 ft.; to test.

Shabeen et al's No. 1 King ... 800 ft. fluid in hole; shut down 2,204 ft.; top pay 2,061 ft.; cleaning out after shot.

KENT COUNTY

White & Smith's No. 1 Pursley estate, 1,320 ft. from E and 2,640 ft. from S of Sec. 8, Blk. H, H.&T.B. Sur. ... Shut down 273 ft.

LAMB COUNTY

Graham Oil & Gas Co.'s No. 1 Ellwood, CWL, Sec. 9, Blk. T, T. A. Thompson Sur. ... Shut down 4,428 ft.

LOVING COUNTY

California Co.'s No. 1 Allen, 330 ft. from SE and SW of Sec. 90, Blk. 1, W.&N.W. Sur. ... Top salt 770 ft.; drlg. 4,100 ft.

California Co.'s No. 1 Reagan & McElvain, 330 ft. SW of NE line and 330 ft. SE of NW line, Sec. 84, Blk. 1, W.&N.W.R.R. Sur. ... Top salt 771½ ft.; drlg. 3,450 ft.

Dixie and Phillips Pet.'s No. 1 Johnson, 1,320 ft. from N and E of Sec. 38, Blk. 54, Twp. 2s, T.&P. Sur. ... Location.

Lockhart & Co.'s No. 3 Bowen & Wells, 330 ft. from NE and SE of Sec. 92, Blk. 1, W.&N.W. Sur. ... Shut down 3,383 ft.

Hadlock et al's No. 2 Russell, 1,650 ft. SW of NE line, 2,310 ft. NW of SE line, Sec. 80, Blk. 1, W.&N.W. R. R. Sur. ... Rigging up and shut down.

Lockhart & Co.'s No. 2 fee, 676 ft. S. 330 ft. W. Sec. 91, Blk. 1, W.&N.W. Sur. ... Spudded 140 ft.; shut down.

Lockhart & Co.'s No. 3 Hubbard, 1,650 ft. from NE line, 330 ft. NW line of Sec. 83, Blk. 33, H.&T.C.R.R. Sur. ... Location.

Lockhart & Co.'s No. 5 Hubbard, 1,650 ft. SW of NE line and 330 ft. SE of NW line Sec. 83, Blk. 33, H.&T.C. Sur. ... Top pay 2,305-08 ft.; swabbed 33 bbls.; drlg. 4,160 ft.

Lockhart's No. 1 Wheat & Ramsey, 440 ft. from NE and NW of Sec. 83, Blk. 1, W.&N.W. Sur. ... Drlg. 3,070 ft.

Miller et al's No. 1 Chapman, 225 ft. from NW and 285 ft. from SW line, Sec. 71, Blk. 1, W.&N.W. Sur. ... Location.

LYNN COUNTY

Lubewell Oil Co.'s No. 1 May, 2,310 ft. S, 2,310 ft. W, Sec. 10, Blk. 7, E.L.R.R. Sur. ... Shut down 190 ft. for casing.

George McCamey's No. 1 Edwards, 165 ft. N and E, Sec. 5, Blk. 2, L.S.&W. Sur. ... Top salt 2,140 ft.; oil show 1,580-90 ft.; hole full sulphur water 4,730 ft.; shut down 5,040 ft.

MENARD COUNTY

Priest's No. 1 Sorrel, 1,000 ft. from E and 200 ft. from S cor., Sec. 132, E.L.R.R. Sur. ... Shut down 1,585 ft.

MIDLAND COUNTY

Pure Oil Co.'s No. 1 Hutt, 2,310 ft. from N and 330 ft. from E of Sec. 14, Blk. 38, Twp. 4s, T.&P. Sur. ... Hole junked; skidded rig 50 ft. south; drlg. 130 ft.

MITCHELL COUNTY

Gant & Teas' No. 1 Handley, 330 ft. S and W parallel to section lines of NE cor. of SE, Sec. 12, Blk. 28, Twp. 1n, T.&P. Sur. ... Location.

Morrison et al's No. 2 Morrison, 2,330 ft. from N and 660 ft. from E of Sec. 31, Blk. 28, Twp. 1n, T.&P. R.R. Sur. ... Fishing 2,940 ft.

PECOS COUNTY

Atlantic O. P. Co.'s No. 1 Shearer, 330 ft. from NW and SW, Sec. 107, Blk. 10, H.Y.N.R.R. Sur. ... Show oil and gas 1,052 ft. and 1,170 ft.; top pay 1,438 ft., plugged back 1,450 ft.; putting on pump.

Black et al's No. 1 Pecos Valley Oil Co., 1,520 ft. from SE and 1,120 ft. from SW of Sec. 34, Blk. 3, H.&T.C. R.R. Sur. ... Shut down 1,406 ft.

California Co.'s No. 1 Jasper Co. Realty Co., 165 ft. from NE line and 159 ft. from SE line of California Co.'s 160 acres, Sec. 21, Blk. 10, H.&G.N.R.R. Sur. ... Drlg. 1,380 ft.; show oil 1,340 ft.

Continental Oil Co.'s No. 1 Bennett, C S, Sec. 68, Blk. 10, H.&G.N.R.R. Sur. ... Drlg. 1,965 ft.

Crosby Prod. & Ref. Co.'s No. 1 Cordova, 330 ft. from N and E of S 320 ac., Sec. 11, Blk. 11, H.&G.N. Sur. ... Top salt 725 ft.; shut down 2,080 ft.

Cromwell et al's No. 1 University, 1,980 ft. from S and 2,310 ft. from E. Sec. 16, Blk. 16 ... Drlg. 1,515 ft.

Fisher & Lowrie's No. 1 Webb, C, Sec. 3, Blk. 203, Tilman & Walters Sur. ... Drlg. 425 ft.

Hayes et al's No. 1 Lea, C NW of NE, Sec. 9, Blk. 106, T. & St.L. Sur. ... Location.

Humble Oil & Ref. Co.'s No. 1 Kokernot, 1,326 ft. from N line and 1,467 ft. from W line of Sec. 227, Blk. 10, G.H.&S.A. Sur. ... Spudding 100 ft.

Hussman Oil Co.'s No. 1 Esters, 960 ft. from N and 300 ft. E. Sec. 83, Blk. OW, T.M.R.R. Sur. ... Fishing 1,680 ft.

Independent Oil & Gas Co.'s No. 1 Jasper County School Land, 1,160 ft. from SE line, 160 ft. from NE line, Sec. 21, Blk. 10, H.&G.N.R.R. Sur. ... Drlg. 1,435 ft.

Martin A. Meyer et al's (formerly Mauch & Kroger) No. 1 Holmes, S half SW, Sec. 5, Blk. 178, T.C. Sur. ... Shut down 2,224 ft.

Messenger et al's No. 1 Byrne, 2,130 ft. from NW line, 1,830 ft. from SW line, Sec. 54, Blk. 10, H.&G.N.R.R. Sur. ... Drlg. 900 ft.

R. E. Moore's No. 1 Arnold, 1,320 ft. from S and 660 ft. from E lines of Sec. 18, Blk. 1, H.&T.C.R.R. Sur. ... Show gas 1,780 ft.; show oil 1,589 ft.; shut down 1,925 ft.

J. R. Miller et al's No. 1 Bennett, 359 ft. W from CWL, Sec. 1, Blk. 119, G.C.&S.F. Sur. ... Spudded and shut down.

J. D. O'Mara's No. 1 Bennett, Sec. 592, 1,460 ft. from S, 150 ft. from E, G.&C.S.F. Sur. ... Shut down 1,080 ft.

J. D. O'Mara's No. 1 Streety, C of Sec. 1, W. P. Howard Sur. ... Show oil 1,785 ft.; shut down 2,200 ft.

Peren Oil Co.'s No. 2 Eaton, C of E of W, Sec. 27, Blk. 3, H.&T.C. Sur. ... Shut down 655 ft.

R. W. Porpus et al's No. 1 State Land, 330 ft. S and W lines of NE, Sec. 28, Blk. OW, T.C.R.R. Sur. ... Spudding.

Phillips Pet. Corp.'s No. 3 Monroe, 3,860 ft. from N and 660 ft. from E, Sec. 39, Blk. 194, G.C.&S.F. ... Cellar.

Phillips Pet. Corp.'s No. 1 Shearer, 330 ft. from NE and SE lines of S. Sec. 99, Blk. 10, H.&G.N.R.R. Sur. ... Shut down 1,175 ft.

Riser & White's No. 1 Riser, 2,297 ft. from S and 997 ft. from E of Sec. 24, Blk. 12, H.&G.N. Sur. ... Location.

Rector Oil Co.'s No. 1 Young, 330 ft. S and 1,650 ft. E of SW cor., Sec. 26, Blk. 9, H.&T.C.N. Sur., but in Sec. 4, Blk. 3, H.&T.C. Sur. ... Show oil 1,628 ft.; drlg. 2,145 ft.

Southern Crude Oil Pur. Co.'s No. 1 Eaton, 330 ft. from SE line, 1,650 ft. from SW line of Sec. 35, Blk. 3, H.T.C.R.R. Sur. — Shut down 1,595 ft.; top pay 1,580 ft.; swabbing 12 bbls. oil daily.

Shell Pet. Corp's No. 5 Smith-D, 990 ft. N and W of SE cor. of Sec. 24, Blk. 194, G.C.&S.F.R.R. Sur. — Fishing 1,876 ft.; top pay 1,754 ft.; flowed 60 bbls. hr.

Shell Pet. Corp.'s No. 1 University-E, 330 ft. from S and W lines of NE, Sec. 31, Blk. 16, University Land — Shut down 1,553 ft.; top pay 1,553 ft.; now flowing 35 bbls. oil, 24 per cent water per day.

Sides & Cloyd's No. 2 Blackstone & Slaughter, C NW of Sec. 34, Blk. A-2, T.&C.R.R. Sur. — Shut down 1,340 ft.

The Texas Company's No. 1 Wright, 660 ft. S and E of NW cor., Sec. 9, Blk. 131, T.&S.T.L. Sur. — Drlg. 2,338 ft.

Transcontinental Oil Co.'s No. 1 University, 1,980 ft. N and E of SW cor., Sec. 18, Blk. 18, University Land. — Total depth 4,910 ft.

Transcontinental Oil Co. et al's No. 2 Sellman, 990 ft. from N and 2,310 ft. from E of Sec. 8, Blk. Z, T.C. Sur. — Shut down 2,167 ft.

Transcontinental Oil Co. et al's No. 3 Sellman, 330 ft. from S and E. Sec. 7, Blk. Z, T.C. Ry. Sur. — Drlg. 1,042 ft.

Transcontinental Oil Co. et al's No. 1-A Sellman, 340 ft. from N and 330 ft. from E of SE, Sec. 12, Blk. 194, G.C.&S.F. Sur. — Shut down 990 ft.

Transcontinental Oil Co. et al's No. 1 Tippett, 380 ft. from S and 660 ft. from E, Sec. 8, Blk. 194, G.C. &S.F. Sur. — Shut down 1,480 ft.

Trees Oil Co.'s No. 3 Trees, 330 ft. from S and W of Sec. 90, Blk. T, H.&G.N. Sur. — Show oil and gas 1,875-81 ft., shut down 2,080 ft.

W. F. Walsh et al's No. 1 Scharbaur Cattle Co., 330 ft. S and 990 ft. E from C, Sec. 16, Blk. 136, T.&St. R.R. Sur. — Drlg. 1,405 ft.

Walsh et al's No. 1 Shearer, 330 ft. from NE and NW of E, Sec. 89, Blk. 10, H.&G.N.R.R. Sur. — Shut down for machine.

PRESIDIO COUNTY

L. C. Brite's No. 4 Brite, 271 ft. from N and 1,188 ft. from E lines of Sec. 245, Blk. 4 — Shut down 570 ft.

REAGAN COUNTY

Big Lake Oil Co.'s No. 1-C University, 2,598 ft. S and 250 ft. W of NE cor., Sec. 1, Blk. 2, University Land. — Top pay 2,903 ft.; top pay 6,807 ft.; drlg. 8,641 ft.

Hagan & Emeh and Amerada's No. 1 Sawyer Cattle Co., 330 ft. from S and 990 ft. from E lines of Sec. 125, Blk. 1, T.&P. Sur. — Shut down 2,310 ft.

Big Lake Oil Co.'s No. 4-C University, 1,120 ft. from N and 1,096 ft. from E of Sec. 1, Blk. 2 — Showing oil and gas at 8,220 ft.; total depth 8,220 ft.; flowed 122 bbls. oil, 5,197,000 ft. gas per day.

Big Lake Oil Co.'s No. 5-C University, 625 ft. from S and 250 ft. from W of Sec. 25, Blk. 9 — Location.

Texon Oil & Land Co.'s No. 2-B University, 4,655 ft. from S, 250 ft. from W, Sec. 36, Blk. 9 — Top pay 8,131 ft.; total depth 8,131 ft.; spraying 150 bbls. daily, 16,000,000 ft. gas.

Texon Oil & Land Co.'s No. 3-B University, 2,240 ft. from S, 920 ft. from W, Sec. 36, Blk. 9 — Drlg. 6,375 ft.

REEVES COUNTY

Exploration Co.'s No. 1 A. A. Kinney, 1,500 ft. W of NE cor., Sec. 26, Blk. C-18, Public School Land, elev. 2,847 ft. — Shut down 2,900 ft.

H. T. Hansford's No. 1 Williams, 150 ft. from S and W, Sec. 17, Blk. 6, H.&G.N. Sur. — Shut down 380 ft.

Black & Fink's No. 1 Brooks, 1,980 ft. N and 660 ft. W, Sec. 16, Blk. 59 — Shut down 1,860 ft.; show oil 1,820 ft.; cleaning out after two shots; filled up 200 ft. with oil.

Southern Crude Oil Pur. Co.'s No. 1 Kloh-Rumsey, 2,310 ft. N and W SE cor., Sec. 23, Blk. 51 — Show oil 3,410-20 ft.; shut down 3,575 ft.

David R. Thompson's No. 1 A. A. Eddins, Sec. 9, Blk. C-1 — Shut down 5,658 ft.

California Co.'s No. 1 Kloh & Rumsey, 1,650 ft. from S and E of Sec. 13, Blk. 54, Twp. 4, T.&P. Sur. — Location.

RUNNELS COUNTY

Gibson & Johnson's No. 1 Johnson, 2,310 ft. N and 1,650 ft. W of SE cor., Sec. 150, E.T.R.R. Sur. — Total depth 2,015 ft.; drlg. 2,185 ft.

Gibson & Johnson's No. 2 Serratt, 2,310 ft. from S and 1,650 ft. from E of Sec. 150, E.T.R.R. Sur. — Derrick.

George W. Boyce's No. 1 Lang, 2,310 ft. N, 6,900 ft. E, Sec. 262 — Show oil 2,028 ft.; shut down 2,504 ft.

SCHLEICHER COUNTY

Delmar Oil Co.'s No. 1 O'Harrow, C of NW, Sec. 56, Blk. 1, G.H.&S.A.R.R. Sur. — Shut down 3,330 ft.

Interstate's No. 1 Whitten, 1,320 ft. from N and W, Sec. 35, Blk. LL, T.C.R.R. Sur. — Total depth 6,146 ft.

Teas & Gant's No. 1 Allison, 1,320 ft. N and E of SW cor. of Sec. 37, Blk. K, G.H.&S.A.R.R. Sur. — Drlg. 500 ft.

George Wilson's No. 1 Page, Sec. 40, Blk. L, 1,290 ft. from N, 1,470 ft. from W, G.H.&S.A.R.R. Sur. — Drlg. 4,737 ft.

SCURRY COUNTY

Byrd & Harmon's No. 1 Murphy, Jr., 330 ft. from N and E of Sec. 114, Blk. 97, H.&T.C. Sur. — Show oil 1,750 ft.; top pay 1,750 ft.; estimate 10 bbls. on pump; fishing 2,442 ft.

Camp Spring Oil & Ref. Co.'s No. 3 Guinn, 1,300 ft. from S, 300 ft. from E, Sec. 12, Blk. 3, H.&T.C.R. sur. — Total depth 4,140 ft.

I. B. Mimms et al's No. 1 J. J. Koonsman, Sec. 216, Blk. 2, H.&T.C.R.R. Sur. — Spudded and shut down 300 ft.

G. E. Dickman and R. B. Pender et al's No. 1 F. C. Davis, 1,000 ft. N and 1,770 ft. W of SE cor. of Sec. 275, Blk. 2, H.&T.C. Sur. — Total depth 4,355 ft.; cleaning out.

Magnolia Pet. Co.'s No. 1 More, 1,320 ft. from S and W, Sec. 379, Blk. 97 — Top salt 750 ft.; encountered 500,000 ft. gas 1,510 ft.; oil show 2,215 ft.; shut down 4,650 ft.

Transcontinental Oil Co.'s No. 1 Peckham, 330 ft. from S and W of R. N. Miller Sur. — Underreaming casing; total depth 535 ft.

SUTTON COUNTY

Independent Oil & Gas Co.'s No. 1 Wilson, Sec. 30, Blk. A, 1,650 ft. from N, 2,310 ft. from W — Location.

TAYLOR COUNTY

Condor Pet. Co.'s No. 1 Stoker, C of NW, Sec. 220, Blk. 64, H.T.C.R.R. Sur. — Total depth 2,580 ft.; rigging up on new rig.

A. H. Gibson et al's No. 1 Cody, 888 ft. N and 160 ft. W of SE cor., Lot 2, Sec. 18, Guadalupe County School Land — Shut down 2,395 ft.; top pay 2,370 ft.; 1,200 ft. in hole; running liner to test 2,436 ft.; pay 2,370-77 and 2,394-95 ft.

Gibson & Johnson's No. 1 Bingham, 330 ft. N and E of SW cor. their 270.8-ac. tract, Sec. 31, Guadalupe County School Land — Drlg. 1,960 ft.

John B. Jameson's No. 1 Webb, 1,170 ft. S and W of NE cor., Sec. 46, Lunatic Asylum Land — Show oil 4,917 ft.; drlg. 5,860 ft.

Hucony Oil Co. et al's No. 1 Richie, C SE Sec. 10, Blk. A, S.P.R.R. Sur. — Drlg. 300 ft.

Mid-Continent Pet. Corp.'s No. 1 Lindsey, 238 ft. N and 219 ft. E of SW cor., Subd. 22, Guadalupe County School Land — Drlg. 2,035 ft.

TERRELL COUNTY

Big Bend Oil Co.'s No. 1 Bassett, C NW, Sec. 155, Blk. D, M.-K.-T.R.R. Sur. — Drlg. 1,840 ft. in blue black shale.

Keck Pecos Trust Co.'s No. 1 Hamilton, C Sec. 6, Georgetown Ry. Sur. — Shut down 3,150 ft.

Miller Bros.' No. 1 Allison & Burke, C NW cor., Sec. 10, Blk. 176, T.&P. Sur. — Shut down 120 ft.

Mrs. J. B. McPhees No. 1 Sam Belt, C, Sec. 78, Blk. D-7, E.L.R.R. Sur. — Shut down 880 ft.; moved off machine.

Transcontinental Oil Co.'s No. 1 Goode, 2,152 ft. from E and 330 ft. from S, Sec. 26, Blk. 161, G.C.&S.F.R.R. Sur. — Shut down 3,030 ft.

Woodley & Jones' No. 1 Pankenham, C SE NW, Sec. 43, Blk. B-2, C.C.S.D.&N.G.R.R. Sur. — Shut down 640 ft.

TERRY COUNTY

Atlantic et al's No. 1 Carlisle, 990 ft. from S and E of Sec. 58, Blk. E, E.L.&R.R. Sur. — Shut down 3,322 ft.

TOM GREEN COUNTY

Cosden Oil Co.'s No. 1 William Anson, 2,310 ft. S, 330 ft. W of NE cor., Sec. 20, Blk. 24, H.T.C.R.R. Sur. — Spudded.

Fitzgerald & Taliaferro's No. 1 Bennett, C SW, Sec. 1,628, E. H. Ringer Sur. — Plugged back to 2,405 ft. to straighten hole; shut down 2,447 ft.

Phillips Pet. Corp.'s No. 1 Gulden, 1,250 ft. from N and 1,583 ft. W of Sec. 77, James Webb Sur. — Drlg. 1,920 ft.

E. W. Wiley et al's No. 1 Maier, 200 ft. from E, 110 ft. from N, Sec. 6, Blind Asylum Land — Show oil 418-20 ft.; total depth 620 ft.

UPTON COUNTY

Cordova Union Land Co.'s No. 1 fee, 330 ft. from S and E line of Sec. 1, Blk. 1, M.-K.-T.R.R. Sur. — Location.

Eppenauer Drlg. Co.'s No. 1 Chaney, 2,310 ft. from N and 330 ft. from W of Sec. 18, Blk. 3, M.-K.-T. Sur. — Top pay 2,290 ft.; total depth 2,400 ft.; 1,200 ft. oil in hole; to shoot.

Gulf Prod. Co.'s No. 3-B Hughes, 160 ft. N and 161 ft. W of most southerly SE cor. of their 200-ac. lease "B" out of Wm. Teer Sur. — Rig.

Pure Oil Co.'s No. 3 Hughes, 150 ft. S and 767 ft. E of NW of their 300 ac., Sec. 4, Wm. Teer Sur. — Partly rigged up; shut down.

T. P. Coal & Oil Co.'s No. 1 Belcher, 1,320 ft. from N and 2,310 ft. from W line, Sec. 10, Blk. 4½, G.C.& S.F.R.R. Sur. — Shut down 3,863 ft.

VAL VERDE COUNTY

A. Bluhm's No. 1 Yoast, 1,760 ft. N, 600 ft. W of SE cor., Sec. 31, Blk. 3, I.&G.N. Sur. — Machine on ground.

Independent Operators' No. 1 Whithead, SE SE, Sec. 30, Blk. 4, I.&G.N. Sur., elev. 1,175 ft. — Shut down 4,850 ft.

O. O. Owen's No. 1 Mills, Sec. 128, Blk. 1, I.&G.N. Sur., elev. 2,130 ft. — Gas sand 2,491-2,520 ft.; tested 125-700 ft. gas; drlg. by tools 5,757 ft.

Phantom Oil Co.'s No. 1 Ingram, 175 ft. W of E line and 300 ft. N of S line, Sec. 33, Blk. D-8, E.L.&R.R. Sur. — Show oil 1,525 ft.; shut down 2,870 ft.

Valvert Oil Corp.'s No. 1 Bassett, C NE, Sec. 47, Blk. Y. — Shut down 4,009 ft.

WARD COUNTY

Anderson et al's No. 1 Boogher et al, 3,364 from NE and 2,497 ft. from SE of Sec. 11, Blk. 5, H.&T.C. Sur. — Drlg. 1,295 ft.

Atlantic and Dorr's No. 1 Costley, 1,722 ft. SE of NW line and 990 SW of NE line, J. W. Howe Sur. No. 2 — Top pay 2,612 ft.; making 1,000,000 ft. gas; hole full of sulphur water 2,615-23 ft.; total depth 2,648 ft.

Atlantic and Delmar's No. 7 Hayzlett, 1,650 ft. from NE and NW of Sec. 17, Blk. 5 — Location.

Dearborn et al's No. 1 Boogher, 1,375 ft. NE and 785 ft. SE of N cor., Sec. 7, Blk. 32, but in Sec. 11, Blk. 5, E.&T.C.R.R. Sur. — Top salt 840 ft.; shut down 1,110 ft.

Gulf Prod. Co.'s No. 3 Wristen Bros., 220 ft. NE of SW and 220 ft. SE of NW, Sec. 18, Blk. 5, H.&T.C. Sur. — Show gas 1,960-70 ft.; filling up with sulphur water 2,520-27 ft.; salt water 2,545 ft.; plugged back to 2,477 ft.

R. F. Owens' No. 1 Johnson, 100 ft. from NE and 1,100 ft. from SE of Sec. 8, Blk. 33, H.&T.C.R.R. Sur. — Shut down 380 ft.

Tex-Oil Prod. Co.'s No. 1 Redman, 1,980 ft. NE of SW line and 1,980 ft. SE of NW line, Sec. 152, Blk. 34, H.&T.C.R.R. Sur. — Show gas 2,806-09 ft.; shut down 4,894 ft.

Richardson et al's No. 1 O'Brien et al, 332 ft. from N and 360 ft. from W, Sec. 5, Blk. F, G.M.M.B.&A. Sur. — Show oil 2,555-62 ft.; show gas 2,573 ft.; increase in oil and gas 2,585-98 ft., 2,615-31 ft., 2,660-70 ft.; total depth 2,686 ft.; flowing average 180 bbls. per day.

Richardson et al's No. 2 O'Brien 322 ft. from N and 1,020 ft. from W of Sec. 5, Blk. F, G.M.M.B.&A. Sur. — Drlg. 302 ft.

Shell Pet Corp.'s No. 1 Owens, located NE cor. of Sec. 16, Blk. 15, H.&T.C.R.R. Sur. — Top pay 2,886-93 ft.; increase at 2,909 ft. and 3,023 ft.; increase in oil 3,022-32 ft.; plugged back to 3,860 ft.; shot 200 qts. from 2,890-2,930 ft.; swabbed 45 bbls. oil May 1.

Shipley et al's No. 4 Hayzlett, 2,050 ft. NW of SE and 2,420 ft. NE of SW line of Sec. 17, Blk. 5, H.&T.C. R.R. Sur. — Drlg. 3,075 ft.; 600 ft. oil in hole.

Shipley et al's No. 5 Hayzlett, assume common line Secs. 16 and 17 is N and S, 220 ft. S and 1,910 ft. W, Sec. 17, Blk. 5 — Standard rig.

Shipley et al's No. 1 Monroe, 330 ft. SE SW, Sec. 3, Blk 1 — Skidded rig 20 ft. east.

J. E. Smith's No. 1 Clement, 152 ft. SW of NE line and 153 ft. SE of NW line, Lot 7, Sec. 7, Blk. 32, H.&T.C.R.R. Sur. — Shut down 725 ft.

Sturm & Paine's No. 1 Cummins, 748 ft. from NE and 155 ft. from NW of Sec. 7, Blk. 32, H.&T.C.R.R. Sur. — Shut down 2,350 ft.; show oil and gas 2,170 ft.; not flowing; made 125-bbl. head after standing 30 days.

Sun Oil Co.'s No. 1 Sealy, 330 ft. from N and E of Sec. 88, Blk. F, G.M.M.B.&A. Sur. — Shut down 2,575 ft.

WINKLER COUNTY

A. W. Phillips' No. 2 Brown et al, 2,000 ft. S and W of NE, Sec. 4, Blk. B-5, Public School Land — Top salt 1,300 ft.; shut down 2,832 ft.; show oil 2,775-85 ft.

Humble Oil & Ref. Co.'s No. 3 Wahon-B, 2,310 ft. S and W of NE cor., Sec. 47, Blk. 26, School Land — Show oil 2,631-44 ft.; show oil 2,725 ft.; shut down 3,005 ft.; cleaning out to shoot.

Liner Drlg. Co.'s No. 1 Campbell, 330 ft. from N and E cor., Sec. 2, Blk. B-5 — Top brown lime 2,510 ft.; show oil 3,670-79 ft.; shot 10 qts. from 3,670-79 ft.; no results; shut down 3,679 ft.

Shell and The Texas Company's No. 1-B Cowden, 660 ft. from S and W of Sec. 39, Blk. B-5, Public School Land — First gas 2,290 ft.; increase 2,580 ft.; total 3,500,000 ft. gas (estimated); drlg. 2,741 ft.

Shell et al's No. 8 Scarborough, 1,020 ft. from N and 1,650 ft. from E of Sec. 2, Blk. 77, Public School Land — Drlg. 2,695 ft.

WILDCAT OPERATIONS IN OKLAHOMA

(Continued from Page 68)

GARFIELD COUNTY

Shell Petroleum Corp.'s No. 1 Loomis, C NW NW Sec. 32-23-4w ..... Drlg. 5,318 ft.
Continental and Barnsdall's No. 1 Brown, CNL SW Sec. 10-20-4w ..... Flowed 725 bbls.; total depth 5,973 ft.; plugged back to 5,960 ft.
E. L. Love et al's No. 1 White, SE cor. NW Sec. 9-24-6w ..... Shut down 5,566 ft.

GRADY COUNTY

J. V. Bailey's No. 1 Hubbard, C NE NW Sec. 1-10-6w.. Shut down 100 ft.
J. M. Henry et al's No. 1 Abraham, SE cor. NW Sec. 4-5-8w ..... Rig.

GRANT COUNTY

Baucher et al's No. 1 Deadman, SW SE Sec. 12-28-4w .. Drlg. 4,740 ft.
Cowden et al's No. 2 Vollmer, CEL NE SW Sec. 22-25-4w. Shut down 5,640 ft.
Otstot's No. 1 Tabor, C NE NE SE Sec. 23-26-3w ..... Drlg. 5,083 ft.

GARVIN COUNTY

Nelson et al's No. 1 Strickland, NE SW Sec. 10-4-3 .... Drlg. 2,130 ft.

GREER COUNTY

I. T. I. O. et al's No. 1 fee, C SW NE Sec. 17-6-24w .... Fishing 2,286 ft.

HARMON COUNTY

Harmon-Tex Oil Co.'s No. 1 Hoadley, NE cor. Sec. 17 4-24w ..... Drlg. 1,510 ft.
S. M. Stauffer's No. 1 Castleman, SW NE Sec. 8-4-26w .. Shut down 625 ft.

HARPER COUNTY

Empire's No. 1 Bruce, C NE SW Sec. 12-25-20w ..... Drlg. 3,855 ft.
Sinclair Oil & Gas Co.'s No. 1 Howell, C SW SW Sec. 14-26-24w ..... Drlg. 8,510 ft.

HASKELL COUNTY

Mid-Western's No. 1 Polster, C NE SE Sec. 33-10-22 .. Shut down 2,375 ft.
Holden's No. 1 Phillip, SE cor. Sec. 3-9-18e ..... Shut down 1,860 ft.
Marion Oil's No. 1 Sanders, NW NE SW Sec. 10-9-18e .. Shut down 2,387 ft.
Sanboise Gas' No. 1 Unknown, SW NW SE Sec. 32-9-21e.. Shut down 2,100 ft.

HUGHES COUNTY

Wright et al's No. 1 Ott, SE SW Sec. 15-5-11 ..... Rig.
Canady et al's No. 1 Kanard, NW SW Sec. 29-9-12 .... 1,000,000 ft. gas 2,284-90 ft.; total depth 2,815 ft.; drlg. 3,218 ft.
Irwin et al's No. 1 Jones, SE NW Sec. 30-5-10 ..... Drlg. 3,115 ft.

KAY COUNTY

Alco Royalty Co.'s No. 1 Wolf, SE SW SE Sec. 34-26-2w. Location.
Waggoner Pet. Co.'s No. 1 Hinkle, C SW NW NW Sec. 3-26-3 ..... O.W.D.; total depth 2,430 ft.; drlg. 2,860 ft.
Blankenship Petroleum Co.'s No. 1 Hansen, SW NW SW Sec. 17-27-2 ..... Fishing 520 ft.
Skelly and Empire's No. 1 Maple, SW cor. Sec. 20-27-4 .. Wilcox 3,655-65 ft., water, abandoned.

KINGFISHER COUNTY

Superior Oil Co.'s No. 1 Story, SE cor. Sec. 25-19-5w .... Fishing 6,285 ft.
Galt Brown's No. 1 Wolf, NW SE Sec. 6-16-7w ..... Shut down 6,015 ft.

KIOWA COUNTY

Merrick Oil Co.'s No. 1 Kelly, NW cor. SE Sec. 20-7-17w. Shut down 1,525 ft.

LEFLORE COUNTY

Red Bank Oil Co.'s No. 1 fee, SE SW NW Sec. 23-9-24 .. Total depth 5,440 ft.; 15,000,000 ft. gas; fishing 5,433 ft.

LATTIMER COUNTY

Limestone Oil & Gas Co.'s No. 1 Murray, NE cor. Sec. 25-5-18 ..... Rig.
Limestone O. & G. Co.'s No. 1 Shaw, NW cor. NE NW Sec. 23-5-18e ..... Drlg. 3,000 ft.

LINCOLN COUNTY

Tom Slick Oil Co.'s No. 1 Hammer, SE NW NW Sec. 35-16-2 ..... Drlg. 4,420 ft.

LOGAN COUNTY

Prairie and Slick's No. 1 Morgan, NW NE Sec. 33-16-1w ..... Drlg. 2,465 ft.
Currier's No. 1 Young, C SW NE SW Sec. 34-17-4w .... Rig.
Haley & Smith's No. 1 Guier, SE cor. SW Sec. 33-18-3w.. Shut down 3,970 ft.

McINTOSH COUNTY

T. C. Young's No. 1 Derrison, Sec. 3-12-15 ..... Fishing 2,325 ft.
Patterson et al's No. 1 Smith, SW cor. NW SE Sec. 32-9-16 ..... Shot 240 qts. 5,446-5,559 ft.; shot went off up hole; fishing.

MURRAY COUNTY

Chieftain Royalty Corp.'s No. 1 Hendrix, SW SE NW Sec. 27-2-2 ..... Drlg. 900 ft.

MUSKOGEE COUNTY

Sioux Oil Co.'s No. 1 Unknown, NW SE Sec. 21-11-19 .... Shut down 1,011 ft.

NOBLE COUNTY

Weaver & Craigin's No. 1 Frederick, C SW NE Sec. 4-24-1w ..... Spudding.
Gypsy Oil Co.'s No. 1 Bergstrom, SE NE Sec. 28-22-1w .. Drlg. 4,291 ft.

OKFUSKEE COUNTY

Flynn & Morgan's No. 1 Burton, NE SW SE Sec. 14-13-9.. Drlg. 1,200 ft.
Irwin et al's No. 1 Allen, SE SW NE Sec. 15-13-9 ..... Drlg. 3,001 ft.
Henry Oil Co.'s No. 1 Harjo, Sec. 36-12-9 ..... Shut down 2,795 ft.
E. L. Robinson's No. 1 Rice, NW Sec. 2-10-9 ..... Location.
Shepard et al's No. 1 Neveas, SE NW SW Sec. 3-12-10.. Shut down 3,661 ft.

OKLAHOMA COUNTY

Prairie and Slick's No. 1 Dill, SE NW Sec. 17-13-3w .... Drlg. 3,850 ft.
Cromwell-Franklin's No. 2 Thompson, SW NE Sec. 15-12-3w ..... Drlg. 4,115 ft.
Warr et al's No. 1 Castle, SW NW Sec. 20-11-3w ..... Drlg. 4,500 ft.
J. F. Cuniff, trustee's No. 1 Church Land, NE SW SE Sec. 17-12-4w ..... Drlg. 5,520 ft.
Magnolia and Ramsey's No. 1 Johnson, C NE SW Sec. 35-13-3w ..... Drlg. 5,944 ft.
Ryan Consolidated's No. 1 Lawton, NE NW Sec. 3-11-2w.. Drlg. 6,233 ft.
Tom Slick Oil Co.'s No. 1 Martin, C NW NW Sec. 13-13-1w ..... T. D. 6,971 ft.; water; plugging back 6,871 ft.; testing.
Hall & Briscoe's No. 1 Holmes, NE cor. SW SE Sec. 10-11-3w ..... Top checkerboard 5,400 ft.; drlg. 5,790 ft.

OSAGE COUNTY

Peters Petroleum Co.'s No. 1, SW cor. NE Sec. 5-22-8 .... Drlg. 2,120 ft.
Kay County Gas' No. 1, C N half NE Sec. 28-24-4 ..... Drlg. 3,650 ft.
Continental Oil Co.'s No. 1, NW SE SE Sec. 24-24-5 ..... Shut down 3,549 ft.

PAWNEE COUNTY

Flynn & Morgan's No. 1 Jones, SW NE Sec. 22-20-5 .... Rig.
Cochran et al's No. 1 Green, NE cor. SW Sec. 15-23-5 .... Rig.

PITTSBURG COUNTY

Empire O. & R. Co.'s No. 1 Williams, C NE SE Sec. 33-7-16e ..... Fishing 3,975 ft.

POTTAWATOMIE COUNTY

Keister & Manning's No. 1 Rowlett, SW SE NE Sec. 30-8-4 ..... Drlg. 4,468-80 ft.; pinched to 100 bbls.
Payne Drlg. Co.'s No. 1 Bullock, SE NE Sec. 22-6-3 ..... Shut down 4,130-4,201 ft.; hole full water; plugged back to Cromwell; made 875 bbls. 24 hrs. 3,505-10 ft.; completed.

ROGER MILLS COUNTY

Bucy & Stone's No. 1 Williams, C SW Sec. 23-12-24w ... Shut down 2,245 ft.
L. C. Hivick's No. 1 Davis, C NW NE Sec. 4-11-26w .... Shut down 2,905 ft.

SEMINOLE COUNTY

T. Adkins et al's No. 1 McGilbray, SE NE Sec. 4-8-8 .... Drlg. 1,025 ft.
Magnolia and Twin State Oil Co.'s No. 1 Harns, SW NE NE Sec. 8-5-6 ..... R.U.S.T. 3,068 ft.
Independent Oil & Gas Co.'s No. 1 Johnson, C NE NE Sec. 33-9-8 ..... Drlg. 3,547-61 ft.; 25,000,000 ft. gas; mudded.

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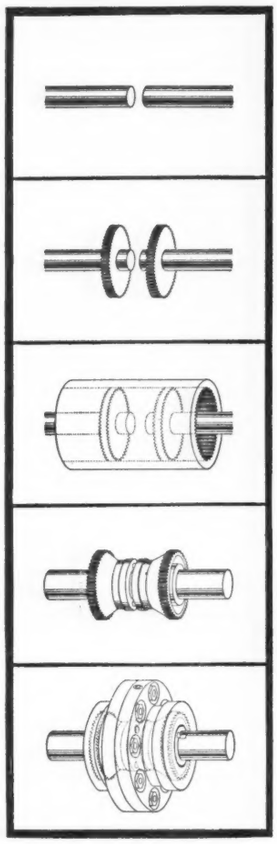

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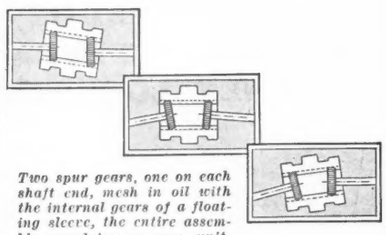

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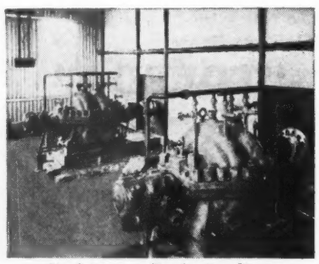

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CITY AND STATE.....

Prairie Oil & Gas Co.'s No. 1 Anders, NW cor. Sec. 23-6-6 ..... Wilcox 3,996-4,000 ft.; water; shut down.
Sunray Oil Co.'s No. 1 Sunday, NW SE Sec. 35-5-5 ..... Location.

WASHITA COUNTY

Southern Inv. Co.'s No. 1 Musie, NW cor. Sec. 10-9-20w.. Shut down 280 ft.

WOODS COUNTY

Peerless O. & G. Co.'s No. 1 Crowell, C NW NE Sec. 23-28-16w ..... Drlg. 5,475 ft.
Gypsy-Prairie et al's No. 1 Thompson, SE cor. SW Sec. 10-25-15w ..... Shut down 6,104 ft.
Sinclair Oil & Gas Co.'s No. 1 Showwalter, C SW SW Sec. 33-27-16w ..... Shut down 6,790 ft.

WOODWARD COUNTY

Farrond et al's No. 1 Unknown, SE cor. SW SE Sec. 2-22-17w ..... Shut down 1,387 ft.
Prairie Oil & Gas et al's No. 1 Wilbur, NE cor. NW Sec. 22-23-17w ..... Drlg. 6,559 ft.
Burgoyne Brothers' No. 1 Merkins, SW cor. SE NE Sec. 15-21-19w ..... Shut down 1,910 ft.

OKLAHOMA PANHANDLE

CIMARRON COUNTY

Magnolia's No. 1 School Land, C SW NE Sec. 27-5-5 .... Drlg. 100 ft.

TEXAS COUNTY

Palo Alto Oil Co.'s No. 1 Graves, NE SW SW Sec. 23-2-18e ..... Spudding; shut down.
Argus Prod. Co.'s No. 1 Ralston, C SW Sec. 23-6n-14e .. Rig.

SOUTHERN OKLAHOMA

ATOKA COUNTY

Bryant-Croxton's No. 1 Mason, NW NE NW Sec. 4-1s-14 .. Shut down 1,498 ft.
Bookshire's No. 1 Guinn, NW cor. Sec. 18-3s-10 ..... Shut down 100 ft.

BRYAN COUNTY

Bush et al's No. 1 Commerce Trust, NE cor. Sec. 35-6s-9 ..... Drlg. 305 ft.
Johnson et al's No. 1 Ussery, SE SW SE Sec. 14-6s-7e .. Shut down 385 ft.
Slab Oil Co.'s No. 1 Ryle, NW SE SE Sec. 27-6s-7 .... Drlg. 1,200 ft.
Marshall's No. 2 fee, C SW SE NW Sec. 26-5s-7 ..... Shut down; 6-in. csg. 265 ft.
Yale Oil Syndicate's No. 1 Craige, C NW NE Sec. 36-9s-9e ..... Shut down 2,200 ft.

CARTER COUNTY

Campen-Lasater Co.'s No. 1 Anderson, NE cor. SE NE SE Sec. 32-4s-2 ..... Fishing 2,580 ft.

CHOCTAW COUNTY

Choctaw Petroleum Co.'s No. 1 Wilson, SW cor. SW Sec. 15-6s-19e ..... Shut down 1,346 ft.

COMANCHE COUNTY

Pelwin Oil Co.'s No. 1 Tafepirdy, C NW NE NE Sec. 5-1s-9w ..... Location.

COTTON COUNTY

Empire O. & R. Co.'s No. 1 Chambers, NW SE Sec. 8-3s-9w ..... Drlg. 4,179 ft.

JOHNSTON COUNTY

N. A. Neff's No. 1 Chapman, C SW NW Sec. 20-4s-5 .... Location.

LOVE COUNTY

Hobbs et al's No. 1 Roberts, NE cor. SW Sec. 20-6s-3w .. Drlg. 50 ft.
Gilcrease Oil's No. 1 Burkhart, NE NW Sec. 13-6s-1 .... Rig.

MARSHALL COUNTY

Wheeler et al's No. 1 Taylor, NE NW NW Sec. 8-7s-6e.. Rig.
Akers et al's No. 1 Spicer, SW SE SE, Sec. 33-5s-7e.... Rig.

McCURTAIN COUNTY

Milton et al's No. 1 Vase, SW NW Sec. 26-6s-21 ..... Shut down 2,287 ft.

STEPHENS COUNTY

Virt Franklin Petroleum Corp.'s No. 1 McPhail, NW SE Sec. 1-2s-7w ..... Drlg. 4,004 ft.

TILLMAN COUNTY

Bryant's No. 1 Miller, NE cor., Sec. 9-1s-14w ..... Drlg. 260 ft.
Bridwell's No. 1 Pan-te-chee, NE SE, Sec. 4-4s-16w.... Shut down 835 ft.
Flake's No. 1 Barba, NE SE NE SE Sec. 19-1s-16w .... Shut down 1,185 ft.
Allen Brothers' No. 1 Howell, SW NE Sec. 13-1-17w .... Drlg. 1,025 ft.
Landfair et al's No. 1 Smith, SE SW SE Sec. 6-2s-16w .. Location.

WILDCAT OPERATIONS IN KANSAS

(Continued from Page 72)

EDWARDS COUNTY

Skelly's No. 1 Johnson, NE SW Sec. 21-26-17w ..... Drlg. 5,010 ft.
Barnsdall Oil's No. 1 McCarty, NW NE Sec. 31-25-17w.. Total depth 4,556 ft., flowed 250 bbls.
Dixie and Amerada's No. 1 McCarty, SW cor. Sec. 22-25-17w ..... Drlg. 4,800 ft.

ELLIS COUNTY

Central Commercial Oil Co.'s No. 1 Helms, SE cor. NE Sec. 2-12-20w ..... Drlg. 1,005 ft.
Streeter & Stearns' No. 1 Leiker, SW NE Sec. 26-13 20w.. Shut down 1,290 ft.
Byrene et al's No. 1 Fisher, NW SE Sec. 4-11-20w ..... Shut down 1,000 ft.
Rush Oil Co.'s No. 1 Gatewood, NW cor. NW Sec. 4-15-20w ..... Drlg. 3,131 ft.

FORD COUNTY

McNabb et al's No. 1 Fowler, C SE Sec. 26-27-22w ..... Shut down 400 ft.
Swain et al's No. 1 Kenthorne, C NW Sec. 21-25-24w .... Drlg. 2,250 ft.

GOVE COUNTY

Valerius & Baucher Oil Co.'s No. 1 Todd, NW cor., Sec. 24-13-27w ..... Rig.

GRAHAM COUNTY

Gulf Coast Oil Co.'s No. 1 Johnson, C S half Sec. 27-8-25w. Shut down 4,340 ft.
Naylor et al's No. 1 St. John, NW SE SE Sec. 27-8-25w.. Rig.

GRANT COUNTY

McKenna et al's No. 1 Sullivan, NE cor. Sec. 12-29-38w.. Rig on ground.

GREENWOOD COUNTY

C. L. Mahan's No. 1 Binns, SE NW, Sec. 23-27-11..... Drlg. 775 ft.
John Harwood's No. 1 Good, C SW NW NE Sec. 36-25-9 ..... Shut down 1,220 ft.
Mallory's No. 1 Denchfield, SE NW Sec. 12-27-9 ..... Shut down 660 ft.
Bundy, Smith & O'Neil's No. 1 Ford, NE NW Sec. 28-25-13 ..... Shut down 50 ft.
F. Konkay et al's No. 1 Rock, NW NE NE Sec. 7-27-12.. Drlg. 1,820 ft.

HARPER COUNTY

Beeler et al's No. 1 Bear, C NE Sec. 21-31-6w ..... Shut down 1,830 ft.

HARVEY COUNTY

Gypsy Oil Co.'s No. 1 Hege, SE NW SE Sec. 13-22-2w.... Rig on ground.
Gypsy Oil Co.'s No. 1 Shine, SE SW, Sec. 26-22-3w .... Drlg. 2,390 ft.
Mrs. Gay et al's No. 1 Grove, C NW NE NW Sec. 29-23-1w ..... Abandoned 3,610-14 ft.

JOHNSON COUNTY

Forrester et al's No. 1 Yazel, CEL SE SE Sec. 18-12-22.. Wilcox 1,440-70 ft., water; total depth 1,547 ft.; abandoned.

KIOWA COUNTY

Phillips-Prairie's No. 1 Bean, NE SE, Sec. 10-30-17w.... Rig.
McKenna et al's No. 1 Ralson, C NE Sec. 14-28-20w..... Rig.

LINN COUNTY

Ferguson & Hiatt's No. 1 Carple, NE SE SW Sec. 22-21-22 ..... Rig.

LYONS COUNTY

Aladdin & Phillips' No. 1 Ratcliff, SW cor. Sec. 29-20-10. Drlg. 1,750 ft.

MARION COUNTY

Marshall et al's No. 1 Higgins, NE cor. Sec. 33-19-5 .... Rig.

MARSHALL COUNTY

Swicker & Sincox's No. 1 Remple, C N half NW Sec. 22-4-9 ..... Drlg. 1,000 ft.
Brazier et al's No. 1 Runkel, SE NW Sec. 13-2-6 ..... Rig.

McPHERSON COUNTY

Harry Skelly et al's No. 1 Neufeldt, SE NE Sec. 19-21-3w ..... Rig.

WILDCAT OPERATIONS IN SOUTHWEST TEXAS

(Continued from Page 76)

BEXAR COUNTY

Burton Oil Co.'s No. 2 Shook, 500 ft. SE of No. 1; No. 1 located 3,150 ft. E line, 150 ft. N line of tract in the M. Monjares Sur., 10 miles SE from San Antonio ... T. D. 2,189 ft.; abandoned, dry.

Dingman Drilling Co.'s No. 1 Coffe, 195 ft. from SE line, 500 ft. from SW line of farm in the Fernando Rodriguez Sur., 1½ miles SW from Alta Vista..... T. D. 400 ft.; abandoned.

Dingman Drilling Co.'s No. 2 Kelso in the Fernando Rodriguez Sur., 1 mile SW of old Alta Vista pool.... T. D. 1,559 ft.; abandoned; dry in Edwards.

Moore-Jauer's No. 1 Holly R. Ellison ..... Drilling in local Trinity at 2,094 ft.

CALDWELL COUNTY

W. E. Allaun and Calco Pet. Co.'s No. 1 Martin ..... T. D. 2,920 ft.; preparing to shoot.

Keen & Malcolm's No. 1 Mollie McNeal, George C. Kimball Sur., 2,500 ft. to W line, 860 ft. to N line, 1 mile S from old Luling Field ..... T. D. 2,190 ft.; temporarily abnd.

Herb. Morgan's No. 1 O. Perry, 2,600 ft. S line, 3,850 ft. W line of survey in the John D. Ranes Sur., 2 miles NE from Bruner Pool ..... T. D. 2,565 ft.; drlg. in Buda.

Trinity Drillers' No. 1 McMullen, 2,125 ft. from NE line, 150 ft. from NW line of Sur., Gibson Betty Sur. .... T. D. 2,985 ft.; taking core from chalk.

DEWITT COUNTY

Gibson & McIntyre's No. 1 William Van Roeder ..... T. D. 1,480 ft.; shut down.

Republic Prod. Co.-Simms Pet. Corp.'s No. 1 E. T. Clark 778-ac., 1,450 ft. from SE line, 7,500 ft. from SW line of tract in the Jose Santos, 4 miles S from Yorktown ..... T. D. 2,180 ft.; drlg. in shale.

Louisiana Oil & Ref. Co.'s No. 1 William Kleavermann 100-ac., 400 ft. out of the NE cor. of tract, 3 miles SW of Nordheim near Karnes County line in the Robert Gallettry Sur. ..... Rigged up.

H. T. Roe's No. 1 Leinhardt ..... T. D. 2,170 ft.; drlg. in shale and lime.

DUVAL COUNTY

T. W. Callahan and W. M. Howard's No. 1 J. M. Luby, 3,960 ft. N line, 3,960 ft. W line Sur. 24 ..... T. D. 1,021 ft.; drlg. in hard, sticky shale, set 10-in. csg. at 309 ft.

Southern Crude O. P. Co.'s No. 1 John Dinn, 3,450 ft. S line, 119 ft. W line of Sur. 480 ..... T. D. 2,626 ft.; drlg. in pink shale.

Southern Oil Co.'s No. 1 Welder Wood, Sur. 216 ..... T. D. 750 ft.; standing; drlg. water well.

EDWARDS COUNTY

Phillips Pet. Corp.'s No. 2 A. G. Holman, 330 ft. from N and E lines of SE of tract, C.C.S.D.&N.G.R.G. Sur. No. 25 ..... T. D. 1,005 ft.; drlg. in lime rock.

Griffith's No. 1 Wardlaw, 150 ft. from S line, 1,505 ft. from Sec. 60, Blk. US, J. J. Clift Sur. ..... T. D. 3,000 ft.; shut down, contract depth.

FRIO COUNTY

Walton & North's No. 1 Trebble, 150 ft. N line, 150 ft. E line, Sec. 64, in the Henry Castro Sur. ..... T. D. 3,450 ft., corrected depth; shut down.

FAYETTE COUNTY

Kelly et al's No. 1 E. M. Burke, in the C. J. A. Weaver Sur. ..... T. D. 488 ft.; shut down.

Moore et al's No. 1 Kerr, 250 varas S of CNL of M. Muldoon lease ..... T. D. 2,485 ft.; shut down.

Muldoon Oil Co.'s No. 1 J. A. Kerr, 2,900 ft. from S, 3,250 ft. from W of M. Muldoon Sur., 2 miles W of Muldoon ..... T. D. 2,510 ft.; drlg. in sandy shale.

GOLIAD COUNTY

Humble Oil & Ref. Co.'s No. 1 Lackey & Weldon, 2,000 ft. from SE and SW lines of the Lackey & Weldon 1,000-ac. tract out of the most SW cor. thereof, in the Javiano Gomez Sur. ..... T. D. 3,951 ft.; reaming down.

Wm. F. Morgan's No. 1 Peirrie, 7,600 ft. SW of NE line, 2,550 ft. SW of NW line of Fannie Peirrie 2,350-A tract, SW part of county in the Vincente Ramon Sur. ..... Rigging up rotary.

GONZALES COUNTY

Acme Oil & Royalty Corp.'s No. 1 Weber, Thomas Wright Sur. ..... T. D. 2,350 ft.; shut down.

Fitzsimmons & Perrinot's No. 1 Z. Huber, 2,100 varas from NW line, 1,450 varas from NE line (river) of survey, 2¾ miles SE of Darst Creek, in Stephen Smith Sur. ..... T. D. 3,190 ft.; in limerock; bailed hole dry at 3,480 ft. in Buda.

(Continued on Page 214)

GULF COAST FIELDS AND WILDCATS

(Continued from Page 77)

Humble & Valley's No. 3 J. W. Wilson ..... Drlg. sandy shale and lime 3,690 ft.

Humble & Valley's No. 4 Ollie Wilson ..... Comp. flowing 400 bbls. 3,124 ft.

Humble & Valley's No. 6 Woodley ..... Derrick.

Humble & Valley's No. 7 Woodley ..... Derrick.

Humble & Valley's No. 8 Woodley ..... Derrick.

DEWALT—FORT BEND COUNTY

Humble Oil & Refg. Co.'s No. 13 Brazos ..... Drlg. 2,941 ft.

Humble Oil & Ref. Co.'s No. 13 Sugarland ..... Comp. flowing 580 bbls. 3,788 ft.

Humble Oil & Ref. Co.'s No. 10 Nelson ..... Location.

HUMBLE—HARRIS COUNTY

Benedum & Trees No. 1 Foley, south ..... Drlg. sand and shale 5,626 ft.

Continental Oil Co.'s No. 1 Koltar, south ..... Total depth 5,157 ft.; plugged to 4,100 ft.; tested salt water.

Humble Oil & Ref. Co.'s No. 12 Williams ..... Drlg. sand 3,953 ft.

M. LaRue's No. 1 Cicero ..... Set 447 ft. of screen 3,920 ft.; flowing by heads.

Lee & Wilson's No. 1 Bender, west ..... Abandoned in heaving shale 4,004 ft.

Rio Brave Oil Co.'s No. 1 fee, west ..... Oil sand 4,212 ft.; cmtd. 6⅝-in. csg. 4,080 ft.

Sun Oil Co.'s No. 4 Bender, west ..... Abandoned in shale 5,516 ft.

Sun Oil Co.'s No. 5 Bender, west ..... Rig.

Sun Oil Co.'s No. 48 River, north ..... T. D. 1,846 ft.; no report.

The Texas Company's No. 24 House, north ..... Standing 3,968 ft.

The Texas Company's No. 42 Stevenson, south ..... Drlg. sticky shale and lime 4,331 ft.

The Texas Company's No. 22 Wheeler & Pickins, northeast ..... Drlg. sand and boulders 745 ft.

The Texas Company's No. 1 Texas Pipe Line Co., west... Drlg. gumbo and boulders 1,095 ft.

The Texas Company's No. 14 Koehler (workover) ..... Bailing fresh water showing oil 3,575 ft.

Trapshooter Riley Oil Co.'s No. 1 Ashton, west ..... Location.

BLUE RIDGE—FORT BEND COUNTY

Navarro Oil Co.'s No. 9-A Robinson, west ..... Spudded.

Sinclair Oil & Gas Co.'s No. 1 Blakely ..... Drlg. sticky shale 5,257 ft.

PIERCE JUNCTION—HARRIS COUNTY

Continental Oil Co.s No. 2 Prudential (workover) ..... Fishing 4,322 ft.

Gulf Production Co.'s No. 32 Taylor ..... Drlg. 2,021 ft.

Navarro Oil Co. and Texas Exp. Co.'s No. 10 Dooley (workover) ..... Repairing rig after blowout 3,915 ft.

Rio Brave Oil Co.'s No. 12-A Settegast (workover) ..... Sand 4,793 ft.; reaming.

Rio Brave Oil Co.'s No. 18-A Settegast, west ..... Rig.

Rio Brave Oil Co.'s No. 19-A Settegast ..... Location.

Saxet Oil Co.'s No. 6 Herman (workover) ..... Comp. flowing 350 bbls. oil 4,635 ft.

LIBERTY—LIBERTY COUNTY

Empire Gas & Fuel Co.'s No. 12 O'Brien ..... Drlg. gumbo 2,403 ft.

HULL—LIBERTY COUNTY

Empire Gas & Fuel Co.'s No. 22 Barngrover (workover).. Comp. flowing 940 bbls. 3,729 ft.

Republic Production Co.'s No. 62 Dolbear (workover) ... Comp. flowing 350 bbls. 2,729 ft.

Ocean Springs Oil Co.'s No. 1 Palmer ..... Comp. pumping 20 bbls. fluid, 10 per cent oil 1,411 ft.

The Texas Company's No. 1 Barrow fee ..... Drlg. shale 3,804 ft.

The Texas Company's No. 3 Hannah-Vacuum ..... T. D. 5,067 ft.; washing.

BIG CREEK—FORT BEND COUNTY

Gulf Production Co.'s No. 58 Davis ..... Drlg. gumbo 1,340 ft.

The Texas Company's No. 2 Fee (workover) ..... Drlg. sand and shale showing gas 3,901 ft.

LOST LAKE—CHAMBERS COUNTY

Pure Oil Co.'s No. 11 Mayes ..... Drlg. gumbo and lime 2,653 ft.

NASH—BRAZORIA COUNTY

Rycade Oil Corp.'s No. 15 Wisdom (workover) ..... Pulling screen to deepen 3,747 ft.

SOUR LAKE—HARDIN COUNTY

Austin & Fenell's No. 1 Watson ..... Shut down 2,394 ft.

SARATOGA—HARDIN COUNTY

Rio Bravo Oil Co.'s No. 80-C Cotton ..... Standing 245 ft.

Rio Bravo Oil Co.'s No. 82-A Cotton ..... Abandoned 555 ft.

GOOSE CREEK—HARRIS COUNTY

Humble Oil & Ref. Co.'s No. 77 Simms-Smith ..... Drlg. shale 6,530 ft.

A. F. Bradbury's No. 5 Gillette ..... No report.

SPINDLETOP—JEFFERSON COUNTY

Yount Lee Oil Co.'s No. 30 McFaddin, workover) ..... Pulling liner to deepen 3,508 ft.

Yount Lee Oil Co.'s No. 81 McFaddin (workover) ..... Drlg. sand and lime 3,779 ft.

Yount Lee Oil Co.'s No. 127 McFaddin ..... Comp. flowing 30 bbls., 3 per cent water 5,320 ft.

Yount Lee Oil Co.'s No. 131 McFaddin ..... Drlg. 1,206 ft.

Yount Lee Oil Co.'s No. 132 McFaddin ..... Spudded.

Yount Lee Oil Co.'s No. 133 McFaddin ..... Spudded.

Yount Lee Oil Co.'s No. 134 McFaddin ..... Rig.

Yount Lee Oil Co.'s No. 135 McFaddin ..... Rig.

Yount Lee Oil Co.'s No. 32 Gladys City ..... Drlg. 2,304 ft.

Yount Lee Oil Co.'s No. 45 Gladys City (workover) ..... Drlg. shale 4,878 ft.

WEST COLUMBIA—BRAZORIA COUNTY

Saxet Oil Co.'s No. 3 Hogg ..... Derrick.

NORTH DAYTON—LIBERTY COUNTY

Victor Oil Co.'s (V. H. Borsodi) No. 1 Gulf ..... Set two joints screen in sand 4,291-4,325 ft.; swabbed dry.

Victor Oil Co.'s (V. H. Borsodi) No. 2 Gulf ..... Drlg. sand and shale 3,210 ft.

John A. Deering's No. 6 fee ..... Standing.

Harvey Smith's No. 1 Simmons & Brown ..... Sand and shale showing oil 5,058-75 ft.; set 6⅝-in. csg. 5,047 ft.

Harrison Oil Co.'s No. 5 Quintette ..... Location.

Houtex Oil Co.'s No. 1 Wilhite ..... Location.

The Texas Company's No. 1 Paraffine fee ..... Fishing 4,951 ft.

T. I. Whitley's No. 1 Schindler ..... Location.

HIGH ISLAND—GALVESTON COUNTY

Gulf Production Co.'s No. 10 Smith ..... Spudded.

Marrs McLean's No. 18 Cade ..... Drlg. sand and boulders 517 ft.

ORCHARD—FORT BEND COUNTY

Gulf Production Co.'s No. 22 Moore ..... Drlg. shale 3,505 ft.

Gulf Production Co.'s No. 21 Moore ..... Drlg. sand 3,028 ft.

ESPERSON—LIBERTY COUNTY

Cranfill-Reynolds Oil Co.'s No. 5 Esperson ..... Drlg. 4,100 ft.

Cranfill-Reynolds Oil Co.'s No. 9 Esperson ..... Oil sand 3,976 ft.

Cranfill-Reynolds Oil Co.'s No. 10 Esperson ..... Comp. flowing 750 bbls. 3,294 ft.

Cranfill-Reynolds Oil Co.'s No. 3 Davis ..... Drlg. 2,076 ft.

Cranfill-Reynolds Oil Co.'s No. 1 Vajdak (workover) ... Drlg. 6,636 ft.

Yount Lee Oil Co.'s No. 3 Moore's Bluff ..... To test sand and shale showing oil 3,373-3,420 ft.

REFUGIO—REFUGIO COUNTY

Fox & Heflin's No. 2 Fannie Heard ..... Coring sand and shale showing oil 3,700 ft.

Houston Oil Co.'s No. 1 Vance ..... Oil sand 3,680-92 ft.; cmtd. 8¼-in. csg. 3,672 ft.

Houston Oil Co.'s No. 1 Kay ..... Drlg. gumbo and lime 4,234 ft.

Houston Oil Co.'s No. 9 Fannie Heard (workover) ..... Trying to perforate 3,665 ft.

Houston Oil Co.'s No. 1 City ..... Derrick.

Houston Oil Co.'s No. 1 O'Connor ..... Location.

Houston Oil Co.'s No. 1 West ..... Location.

Houston Oil Co.'s No. 1 Rose Lambert ..... Drlg. sand 2,179 ft.

Houston Oil Co.'s No. 1-A Fannie Heard ..... Derrick.

Houston Oil Co.'s No. 1 Sitterle ..... Drlg. sticky shale and gumbo 1,886 ft.

Independent Oil & Gas Co.'s No. 1-C Heard ..... Dry and abandoned 5,720 ft.

Houston Oil Co.'s No. 3 Rook, receiver ..... Derrick.

Independent Oil & Gas Co.'s No. 4 Claude Heard ..... Comp. flowing 750 bbls. oil 3,694 ft.

Independent Oil & Gas Co.'s No. 2-C ..... Location.

Independent Oil & Gas Co.'s No. 1 Clint Heard ..... Location.

Independent Oil & Gas Co.'s No. 1 Mercy Academy ..... Drlg. sand showing oil 5,366-70 ft.; to make drill stem test.

Independent Oil & Gas Co.'s No. 1 Helen Reilly ..... Drlg. shale 5,231 ft.

Independent Oil & Gas Co.'s No. 1 M. F. Lambert ..... Drlg. sticky shale 4,335 ft.

Independent Oil & Gas Co.'s No. 1 O'Brien ..... Temporarily abandoned 6,643 ft.

Edwin M. Jones' No. 1-A Mitchell ..... Location.

Edwin M. Jones' No. 1 Jeter ..... Rigging up to pump; sand 3,681-96 ft.

Edwin M. Jones' No. 2-A Mitchell ..... Rig.

Edwin M. Jones' No. 2-A J. F. B. Heard ..... Rig.

Larco Co.'s No. 5 Strauch ..... Rig.

Mission Drlg. Co.'s No. 1 Moss ..... Coring hard sand 6,226-29 ft.

Mission Drilling Co.'s No. 1 Eliza Brown ..... Drlg. shale 452 ft.

T. P. Morgan's No. 1 St. Johns ..... Drlg. sticky shale 3,423 ft.

Moody-Seagraves Producing Co.'s No. 7 City ..... Comp. flowing 800 bbls. 3,695 ft.

Moody-Seagraves Prod. Co.'s No. 2 O'Brien ..... Drlg. gumbo lime 1,310 ft.

Morgan Oil Corp.'s No. 1 O'Connor ..... Derrick.

Morgan Oil Corp.'s No. 2 O'Connor ..... Rig.

Morgan Oil Corp.'s No. 3 O'Connor ..... Rig.

Morgan Oil Corp.'s No. 4 O'Connor ..... Derrick.

Pearson Properties, Inc.'s No. 2 Ryals ..... Derrick.

Rutherford-Traylor Oil Co.'s No. 1 Cable ..... Set 20 ft. screen 3,698 ft.; swabbing.

Saxet Oil Co.'s No. 2 Ryals ..... Oil sand 5,457-61 ft.; cmtd. 6⅝-in. csg. 5,454 ft.

Saxet Oil Co.'s No. 2 Cable ..... Comp. flowing 420 bbls. 3,679-87 ft.

Saxet Oil Co.'s No. 3 Cable ..... Rig.

Sun Oil Co.'s No. 3 Buckley, Lot 5, Blk. 2 ..... Swabbing 3,670-93 ft.

Sun Oil Co.'s No. 4 Buckley ..... Drlg. gumbo and lime 3,377 ft.

Sun Oil Co.'s No. 2 Johnson ..... Comp. flowing 350 bbls. 3,670-85 ft.

Union Producing Co.'s No. 2 Lambert ..... Oil sand 5,891 ft.; drlg. plug.

Union Producing Co.'s No. 3 Lambert ..... Drlg. sandy shale 3,480 ft.

Union Producing Co.'s No. 4 Morgan-Vance ..... Derrick.

Union Producing Co.'s No. 4 Morgan-Shelly ..... Rig.

Union Producing Co.'s No. 3 O'Brien ..... Sand showing oil 5,422 ft; cmtd. csg.

Union Producing Co.'s No. 4 O'Brien ..... Drlg. hard shale and sandy lime 5,418 ft.

Union Producing Co.'s No. 3 Powers ..... Drlg. sandy shale and lime 4,625 ft.

Union Producing Co.'s No. 4 Powers ..... Cmtd. csg. 1,204 ft.

Union Producing Co.'s No. 2 Shelton ..... Drlg. sandy shale and lime 3,628 ft.

Union Producin Co.'s No. 3 Mitchell ..... Drlg. 4,461 ft.

Union Producing Co.'s No. 4 Mitchell ..... Rig.

Union Producing Co.'s No. 9 Fannie Heard ..... Drlg. gumbo 2,855 ft.

SOUTH LOUISIANA FIELDS

LOCKPORT—CALCASIEU PARISH

Vacuum Oil Co. and Gulf Ref. Co.'s No. 26 Miller ..... Drlg. sand 2,344 ft.

Vacuum Oil Co. and Gulf Ref. Co.'s No. 27 Miller ..... Drlg. rock 3,300 ft.

Vacuum Oil Co. and Gulf Ref. Co.'s No. 28 Miller ..... Derrick.

Vacuum Oil Co. and Gulf Ref. Co.'s No. 29 Miller ..... Moving in material.
Vacuum Oil Co. and Gulf Ref. Co.'s No. 5 Freiberg & Wolf ..... Drlg. gumbo 1,988 ft.
Vacuum Oil Co. & Gulf Producing Co.'s No. 7 Farquahar.. Location.

HACKBERRY—CAMERON PARISH

Calcasieu Oil Co.'s No. 5 Caldwell ..... No report.
Calcasieu Oil Co.'s No. 18 Watkins ..... No report.
Duhon Oil & Mineral Co.'s No. 1 Duhon ..... Derrick.
Rycade Oil Corp. and Humble's No. 1 Gulf Land (workover) ..... Pulling tubing; total depth 5,087 ft.
Rycade Oil Corp. and Humble's No. 5 Gulf Land ..... Location.
Sun Oil Co.'s No. 1 J. H. Duhon ..... Drlg. 3,200 ft.
Yount Lee Oil Co.'s No. 10 School ..... Drlg. 3,420 ft.

JENNINGS—ACADIA PARISH

The Texas Company's No. 5 Rayne heirs, King tract .... Reported in salt 8,014 ft.
Yount Lee Oil Co.'s No. 8 Houssiere-Latrielle, Section 47-5s-2w ..... T. D. 7,300 ft.; cmtd. 7-in. csg.
Yount Lee Oil Co.'s No. 6 Crowley ..... Drill stem stuck 5,150 ft.; abandoned.

VINTON—CALCASIEU PARISH

Gulf Refining Co.'s No. 50 Star-Vincent ..... Drlg. 2,712 ft.
Vinton Petroleum Co.'s No. 6 Matilda Gray ..... Comp. flowing 2,500 bbls. 3,440 ft.

BAYOU BOUILLON—ST. MARTIN PARISH

Rycade Oil Corp.'s No. 1 Woodyard Lake ..... Building derrick.
Rycade Oil Corp.'s No. 9 Bouillon Fee ..... Abandoned in salt topped at 5,74[illegible] ft.

STARKS—CALCASIEU PARISH

Adams Oil Co.'s No. 1 Roderick ..... No report.
J. O. Davis' No. 1 Industrial ..... Standing 3,775 ft.
Gulf Refining Co.'s No. 21 Lutcher-Moore ..... Comp. pumping 70 bbls. 559 ft.

SWEET LAKE—CAMERON PARISH

Pure Oil Co.'s No. 9 Yount Lee ..... Coring hard sand 4,756 ft.

SORRENTO—ASCENSION PARISH

Gulf Refining Co.'s No. 18 United Land Co. ..... Comp. flowing 350 bbls. 7 per cent water, 1,614 ft.

MISCELLANEOUS WILDCATS

TEXAS

AUSTIN COUNTY

Black Oil Co.'s No. 1 Lancashire, near Sealey ..... Drlg. sticky shale 3,140 ft.
Empire Gas & Fuel Co.'s No. 1 Boyd, San Felipe ..... Drlg. rock 3,884 ft.
O'Hara et al's No. 1 Batla, near Raccoon City ..... Fishing 4,000 ft.

BRAZORIA COUNTY

The Texas Company's No. 1 Ewin, Harvey Little Sur. ... Drlg. sticky shale and lime 4,18[illegible] ft.
Mills Bennett Production Co.'s No. 1 Random, Allen .... Drlg. sandy shale and lime 4,64[illegible] ft.
Faust et al's No. 5 Faust ..... Sandy shale 4,083 ft.; cem. 6⅝-in. casing.
Rucks & Patterson's No. 1 Hunter, southwest of Hoskins.. Shut down 1,185 ft.
Rycade Oil Corp.'s No. 1 Rapid City, Henry Austin Sur... Drlg. gumbo 4,112 ft.
Shell Petroleum Corp.'s No. 1 Blakely-Winston, Danbury ..... Salt 5,228-55 ft.; plugged to oil sand 1,572 ft.
Steel & Strickland's No. 1 Lockridge ..... Rig.
United Oil Syndicate's No. 1 Moores, Francis Moore Sur.. Derrick.

CHAMBERS COUNTY

Chicago Oil Corp.'s No. 1 Lawrence ..... Drlg. sand 3,417 ft.
Shell Petroleum Corp.'s No. 1 Herff, Moss Bluff ..... Drlg. shale and sand 3,654 ft.
Pure Oil Co.'s No. 1 Kirby, Charles Tilton Survey ..... Drlg. gumbo 1,633 ft.
Rycade Oil Corp. and Pure Oil Co.'s No. 1 Jackson, Oyster Bayou ..... Rig.
Superior Oil Corp.'s No. 1 Jackson ..... Drlg. gumbo 3,337 ft.

FORT BEND COUNTY

Gulf Production Co.'s No. 2 Sugarland, Clodine ..... Drlg. sand 2,632 ft.
Pure Oil Co.'s No. 1 Jackson Brown, Barrett and Harris Survey ..... Drlg. shale, lime and shell 4,361 ft.

GRIMES COUNTY

Cranfill & Reynolds Oil Co.'s No. 1 Baylor, southeast Navasota ..... Abandoned 4,590 ft.

HARDIN COUNTY

D. O. Speights' No. 1 Fee, near Batson ..... Drlg. 846 ft.

HARRIS COUNTY

Baldwin and associates' No. 1 Kitzman, Cypress ..... Shut down 4,247 ft.
Cranfill-Reynolds Oil Co.'s No. 1 Rorick, J. Ogburn Sur... Drlg. shale 900 ft.
Humble Oil & Ref. Co.'s No. 7 Warren, Hockley ..... Drlg. shale and sand 5,393 ft.
Humble Oil & Ref. Co.'s No. 1 Siadous, Mykawa ..... Drlg. sandy shale 5,003 ft.
Humble Oil & Ref. Co.'s No. 2 Minnetex ..... Standing 1,216 ft.
Sloan Prospecting Co.'s No. 1 Ulrich, Hannah Nash Sur... Coring lime 6,174 ft.
Strang Oil Co.'s No. 1 Good, Deer Park ..... Drlg. gumbo and shale 1,665 ft.
Martin, Drake & Jones' No. 1 Haney ..... Drlg. shale and lime 4,994 ft.

JACKSON COUNTY

The Texas Company's No. 1 C. A. Mitchell, G. Ewing Sur. ..... Drlg. gumbo 1,000 ft.

JEFFERSON COUNTY

Gulf Production Co.'s No. 5 Burrell, Fannett ..... Tested salt water 5,155-67 ft.
The Texas Company's No. 1 Fitzhugh, Big Hill ..... Fishing 5,863 ft.
Westbury Oil Co.'s No. 1 West, Choate Sur. ..... Shut down 3,100 ft.

LIBERTY COUNTY

Gulf Production Co.'s No. 4 Boyt, Hankamer ..... Repairing rig after blowout; ga sand 2,719-2,824 ft.
Gulf Production Co.'s No. 5 Boyt, Hankamer ..... Set 32 ft. screen 2,791 ft.; comp flowing 700 bbls. 21.1 gravity oil on three-quarter inch choke
Gulf Production Co.'s No. 1 A. E. Lee, Hankamer ..... Drlg. 424 ft.
Gulf Production Co.'s No. 1 McFadden, Moss Bluff ..... Drlg. gumbo and lime 3,485 ft.
Humble Oil & Ref. Co.'s No. 1 Sabine Tram, Devers ..... Drlg. gumbo 450 ft.
Tucker et al's No. 1 Bell ..... Location.

MATAGORDA COUNTY

Cockburn et al's No. 1 Hawkins, Shepherds, Mott ..... Drlg. hard sand 5,310 ft.

MONTGOMERY COUNTY

Kelley-Kaker's No. 2 Guerges ..... Shut down 1,915 ft.

ORANGE COUNTY

Gulf Production Co.'s No. 1 W. H. Starks, Port Neches .. Drlg. 236 ft.
The Texas Company's No. 2 Kuhn, Port Neches ..... Drlg. gumbo 2,575 ft.
The Texas Company's No. 2 Stark, Port Neches ..... Drlg. sand and shale 3,268 ft.

WALLER COUNTY

Kirby Petroleum Co.'s No. 2 Davis, San Felipe ..... Losing returns 3,000 ft.
W. P. Morris' No. 1 Chapman, Donoho Sur. ..... Shut down 2,075 ft.

WASHINGTON COUNTY

W. D. Anderson's No. 1 Mueller ..... Drlg. rock 2,390 ft.
W. Birdwell's No. 1 Schram, James Walker Sur. ..... Shut down 2,110 ft.
Metal et al's No. 1 Schwartz ..... Abandoned 3,920 ft.
Mid-Kansas Oil & Gas Co.'s No. 1 Sommers ..... Abandoned 3,510 ft.
Mid-Kansas Oil & Gas Co.'s No. 1 Johnke, A. Miller Sur. ..... Location.
Sun Oil Co.'s No. 3 Clay, Clay Creek ..... Abandoned in cap rock 2,720 ft.
Sun Oil Co.'s No. 9 Grote, Clay Creek ..... Drlg. 325 ft.
Sun Oil Co.'s No. 2 Janner, Clay Creek ..... Drlg. shale 800 ft.
Sun Oil Co.'s No. 5 Hunt, Clay Creek ..... Location.

SOUTH LOUISIANA

ACADIA PARISH

Calcasieu Oil Co.'s No. 1 Hays, Sec. 10-8s-1w ..... No report.
Charles P. Siess' No. 1 Lyons, Sec. 4-10s-1e ..... Location.

CALCASIEU PARISH

Wilfred Lahay's No. 2 James ..... Standing 3,775 ft.

CAMERON PARISH

Shell Petroleum Corp.'s No. 12 Watkins, Black Bayou ... Pulling screen to workover 5,239 ft.
Shell Petroleum Corp.'s No. 15 Watkins, Black Bayou ... Location.
The Texas Company's No. 5 Calcasieu Lake, Calcasieu Lake Dome ..... Abandoned in cap rock 3,907 ft.
Vacuum Oil Co.'s No. 1 Cameron Meadows, Sec. 21-14s-13w ..... Fishing 3,800 ft.

IBERIA PARISH

The Texas Company's No. 5 Vermillion Bay ..... Building derrick.

IBERVILLE PARISH

Shell Petroleum Corp.'s No. 4 Wilbert, White Castle ..... Making drill stem test 5,175 ft.
Standard Oil Co.'s No. 4 Schwing, Bayou Blue ..... No report.
Standard Oil Co.'s No. 5 Schwing, Bayou Blue ..... Building derrick.
Standard Oil Co.'s No. 5 Wilbert, Bayou Blue ..... Location.
Standard Oil Co.'s No. 6 Wilbert, Bayou Blue ..... Salt 3,026 ft.; to test sand at 1,975 ft.
Standard Oil Co.'s No. 1 Case, Bayou Des Glaise ..... Drlg. 3,304 ft.
Standard Oil Co.'s No. 2 Case, Bayou Des Glaise ..... Location.

JEFFERSON DAVIS PARISH

Pure Oil Co.'s No. 1 Day, Sec. 1-10s-5w ..... Drlg. hard shale 5,183 ft.
Shell Petroleum Corp.'s No. 1 Heyd, Iowa ..... Rigging up.
Yount Lee Oil Co.'s No. 1 Courtney, Welsh ..... Drlg. 1,986 ft.
Yount Lee Oil Co.'s No. 1 Abbott, Welsh ..... Drlg. 2,200 ft.

LA FOURCHE PARISH

The Texas Company's No. 1 Leesville ..... Cmtd. 10-in. csg. 1,085 ft.

PLAQUEMINE PARISH

Humble Oil & Ref. Co.'s No. 1 Lake Washington, Lake Grand Ecaille ..... No report; previous report drlg. hard lime 4,945 ft.
The Texas Company's No. 4 State, Garden Island Bay ... Rig.

ST. LANDRY PARISH

Elbof Exploration Co.'s No. 1 Ledoux, Eunice ..... Shut down 4,364 ft.
Herbert-Baker Oil Co.'s No. 1 Fisher, Sec. 10-38-4e ..... Shut down 4,000 ft.
Gulf Refining Co.'s No. 2-A Hoskins, Port Barre ..... Pulling screen to deepen 3,660 ft.
The Texas Company's No. 7 Botney Bay, Port Barre ... Drlg. 1,501 ft.
The Texas Company's No. 8 Botney Bay, Port Barre ... Location.

ST. MARY PARISH

Pure Oil Co.'s No. 2 Wax Lake, Sec. 12-17s-9e ..... Drlg. shell 1,784 ft.

TERREBONNE PARISH

Charles Paggi's No. 2 Evergreen, Sec. 145-15s-16e ..... No report.
The Texas Company's No. 4 State-Bay St. Elaine ..... Drlg. hard sand and lime 4,422 ft.
The Texas Company's No. 1 La. L. & E. Co., Bay Junope.. Location.
The Texas Company's No. 2 State, Lake Pelto ..... Drlg. gumbo 1,920 ft.
The Texas Company's No. 3 State, Caillou Island ..... Rig.
The Texas Company's No. 4 State, Lake Barre ..... Building derrick.
The Texas Company's No. 3 La. L. & E. Co., Four Isle ... Abandoned in hard rock 3,755 ft.
The Texas Company's No. 2-A State, Dog Lake ..... Rig

EXPANSION REVIEWED BY CHAIRMAN MORRIS

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his average daily demand and 8 to 10 times his average daily demand during summer months.

The improvement of this load factor condition will become more and more necessary and essential to the profitable operation of our long pipe lines as our large now known reservoirs diminish. The more addition of new business that has the exact characteristics of present business may or may not mean any increased revenue per dollar invested unless excess facilities have already been provided prior to the time of securing this new business. The mere multiplication of the number of domestic consumers, whose annual load factor, under present marketing conditions of natural gas, will not exceed 20 per cent, is not the problem before this association, nor does it require the talent and technical skill the men connected with our research department possess.

As a general proposition, the older natural gas companies have quite naturally developed the use of gas for house heating. This, however, is a problem engaging the attention of the manufactured gas companies and also natural gas companies in the cities recently served. We all realize that a Utopian situation in the distribution and sale of natural gas would be to obtain as nearly as possible 100 per cent annual load factor.

The present developed uses of natural gas do not afford a summer market in any respect equal to the winter demand. This brings us to the question of what further uses we can find for our product in the household during the summer months. Some progress has been made along this line in the development and the marketing of gas refrigerators, but as the use of gas for this purpose is estimated at not more than 5 per cent of the demand created by the heating load, obviously we must work in other directions for the answer. Taking inspiration from the use of gas for refrigeration, this suggestion presents itself: If the heating load created our winter peak, why not use gas for summer cooling and in a large measure fill the summer valley?

Eugene D. Miliner, the industrial research representative of the American Gas Association, very aptly pointed out the advantages and the possibilities of such a development. He states that research is now under way to determine the fundamental factors with greater accuracy and to develop mechanical equipment and cooling media that will be reliable and that can be operated simply, and further states that research of this character has the endorsement of the American Gas Association, acting for the gas industry, and that the executive board of that organization has instructed a committee on industrial gas research to lend every encouragement to its energetic prosecution.

House Cooling Unit

Many of us are familiar with the time and money that have been required to develop a gas refrigerator and are hopeful that a house-cooling unit may be developed within a short time.

If it is possible through the activities of the research department to develop off-peak uses for domestic gas, then the entire revenue derived from such uses, less the cost of gas purchased, will be correspondingly reflected in a similar increase in the net revenues of the industry.

Now is the time to provide funds for further increasing the activities in the research and developing of house-cooling devices and other off-peak uses for gas, but such funds cannot be provided from the present American Gas Association budget, for the reason that so many companies are changing from manufactured to natural gas. This situation presents a serious loss to association revenue since the gross revenues of the companies are usually sharply reduced because of lower rates and because the companies then pay to the association on the lower natural gas dues basis so that the organization loses twice by the same operation, in changing from manufactured to natural gas. The loss to the association by this process is not yet serious, but that it soon will be, to the extent of crippling the organization's activities and reducing the money available for research, is obvious.

And now, notwithstanding that the natural gas industry is the direct means by which the association's finances are being lessened, I believe that the Natural Gas Department should urge the expenditure of additional funds for research work in house cooling and in other methods of adding sales which will improve load factors. For this purpose I recommend the appointment of a committee of the Natural Gas Department to study the subject and to make recommendations to the meeting in Atlantic City in October as to what natural gas dues should be paid.

CANADIAN FIELDS

(Continued from Page 82)

come included: Gas sold and consumed, $522,942; crude naphtha, $1,078,506; crude oil, $83,069; miscellaneous receipts, $771,220.

In 1929 the company drilled 16,929 feet of hole and produced 293,247 bbls. of naphtha and 25,824 bbls. of crude oil. Gas sold to the Canadian Western Natural Gas Co. amounted to 6,873,578,000 feet out of a total of 9,739,567,000 feet, the balance being sold to the Imperial refineries at Calgary or to users in Turner Valley. The report states:

"The results of drilling operations have been disappointing. Prior to the year 1929 it was believed that any Turner Valley well drilled to the limestone would be a certain producer of petroleum products, but unfortunately the experience of the last year indicates this is not true. Geological formations in the valley are greatly disturbed and it is impossible from the drilling operations in one locality to forecast accurately results in

contiguous areas. At the end of 1929 there were approximately 30 wells in Turner Valley Field drilling towards the limestone. The future operations of your company depend to some extent upon the success of such drilling."

The financial statement of Dalhousie Oil Co., a Royalite subsidiary, showed for 1929 net profits of $49,489.47.

Central Turner Valley

In the Central Turner Valley, some new drilling is being started or in prospect. British Dominion Oil Development Corp.'s No. 3, LSD 6, Section 12-20-3w5, has spudded in and is drilling below 110 feet with cable tools. Spooner Oils' No. 4, LSD 14, Section 13-2-3w5, is reported almost ready to spud in. In Section 12-20-3w5 Widney Petroleums, Ltd., is planning to drill No. 2 about 300 feet south of No. 1 producer. Widney's No. 1, drilled last year, got light crude production in the McDougall-Segur sands, and has been making around 2,800 bbls. a month, shows very little diminution, and has already paid 15 per cent out of production since October.

In Section 1-20-3w5 Okalta Oils' No. 1, LSD 1, is reported to have increased production to 275 bbls. a day after being frozen off. At the company's annual meeting the following officers were elected: President, John I. McFarland; vice president, W. S. Herron; secretary-treasurer, F. Whitaker; directors, R. W. Ward, H. K. Reed, James W. Davidson, T. M. Carlyle, L. H. Fenerty, P. S. Woodhall, Eric L. Davis. Production from No. 1 well for 1929 was reported at 77,290 bbls.

Shareholders of Regent Oil Co. have approved the merger with Mid-Continent Oil & Refining Co. on the proposed basis of two shares of Regent for one of Mid-Continent. Regent Oil Co. has No. 1 well in LSD 16, Section 1-20-3w5, making around 50 bbls. a day from the lime, with No. 2 standing at 2,175 feet and No. 3 at 2,540 feet. The Mid-Continent company will complete Nos. 2 and 3 to the lime, in addition to continuing its development work in the Red Coulee Field, where it has one producing well and a second test drilling.

North Turner Valley

In North Turner Valley, following completion of Model Oils' No. 1, in LSD 8, Section 22-20-3w5, and abandonment of Dome Oils' No. 1, in Section 24-20-3w5, Anaconda Oil Co.'s No. 1, LSD 16, Section 22-20-3w5, is practically the only active test. After considerable trouble with caving, the test is making new hole below 2,730 feet, and planning to carry 10-inch casing to 3,500 feet.

In the Pincher Creek district, Weymarn Petroleums' No. 2, LSD 5, Section 7-6-1w5, is at 1,520 feet and drilling close to the Dalhousie sands, with sufficient gas for drilling fuel.

An important new test is being started by Hudson's Bay Oil Co. on Paint Earth Creek 12 miles north of Castor and 8 miles south of Galahad. Casing and equipment are being unloaded at Castor. Young Petroleum Co. of Calgary has also arranged to drill near Castor for gas and is completing arrangements for a franchise to supply the town.

Red Coulee Field

In the Red Coulee international field, several tests are rapidly nearly completion. On the Montana side, Cosmos Petroleum Co.'s No. 1 Thacker, Section 2-37-4w, is definitely the largest producer yet drilled, pumping around 380 bbls. a day. Gas anchor has been connected on the tubing and new gas engine for pumping is being installed. Cosmos' No. 2, NW SE, Section 2-37-4w, a quarter mile due west of No. 1, is digging cellar and unloading casing and equipment. South of Cosmos' No. 1, Hannah-Porter Oil Co.'s No. 1, SE, Section 2-37-4w, is reported rigged up ready to spud in. Monalta Oil Co.'s No. 2 Buckley, Section 1-37-4w, is making 200 bbls. a day flowing by heads and is installing pumping engine. Monalta's No. 3, same section, is rigging up rotary tools. Mid Continent Oil & Refining Co.'s No. 2 Farbo is at 2,005 feet and underreaming. Mid-Continent's No. 3 is digging cellar on the SE, Section 2-27-4w, offsetting Cosmos' No. 1. Huso Brothers' No. 1, NE, Section 1-37-4w, is resuming at 2,045 feet after running 6-inch casing. Rice & Radigan's No. 1, SW, Section 1-37-4w, offsetting Cosmos' No. 1 to the east, is rigging up. Adanac Oil & Gas Co.'s No. 1 Harris, SW SW, Section 8-37-3w, is working on derrick. Elliott Syndicate is hauling timbers for a direct diagonal offset to Cosmos' No. 1. Ohio Oil Co. has located No. 1 in NE SW, Section 2-37-4w, a quarter mile west of Cosmos' No. 1.

On Alberta End

On the Alberta end of the structure, Commonwealth Petroleums' No. 1, LSD 10, Section 3-1-16w4, is setting 10-inch casing around 2,200 feet. Devonshire Oils' No. 1, LSD 3-4, Section 10-1-16w4, is resuming after setting 15½-inch casing at 200 feet. Southern Alberta Exploration's No. 1, LSD 8, Section 3-1-16w4, is drilling after setting surface casing at 205 feet. Alberta Pacific's No. 1, LSD 2, Section 3-1-16w4, is drilling at 1,225 feet after setting 12½-inch casing. Capitol Oil & Natural Gas Co.'s No. 1, LSD 3, Section 21-1-16w4, is drilling below 50 feet. Alberta Pacific Consolidated Oils, Ltd., has appointed Herbert E. Munson as its resident geologist in the Red Coulee Field and will conduct a comprehensive survey to be followed by extensive new drilling.

Dalco Oil & Gas Co.'s No. 1, LSD 4, Section 11-1-16w4, is drilling at 1,545 feet. Ko-Top Oil's No. 1, LSD 1, Section 2-1-17w4, is shut down at 1,650 feet. Celtic Oils, Ltd., has spotted No. 1 test in LSD 4, Section 17-1-16w4. Alliance Oils, Ltd., of Vancouver, British Columbia, has spotted its No. 1 test in LSD 9, Section 7-1-16w4, Russell V. Johnson making the location. The company holds 1,620 acres on various Alberta structures. Harold C. Ralph of Vancouver is president. Inland Petroleums, Ltd., has been incorporated by Arthur Densmore of Lundbreck and Alex Morrison of Coleman and will drill on the Red Coulee structure. Bruce Sharp Syndicate of Vancouver is preparing for a test in LSD 7, Section 16-1-16w4.

Border Fields

On the Spring Coulee structure, Alberta Pacific's No. 1, Section 15-4-23w4, is drilling below 287 feet. A sandstone horizon was encountered at 120 feet, though the water well drilled to 600 feet almost entirely through subsoil and encountered no sandstone.

In the Skiff Field, Devenish Petroleums' No. 4, NW, Section 29-6-14w4, is rigged up ready to spud in.

In the Blood Reserve area, Lethbridge Petroleum & Refineries, Ltd., is completing core drilling operations on its acreage and will shortly locate its No. 1 commercial test, to spud in this summer. Location will be about 5 miles west of Lethbridge.

Acadia Valley Producer

In the Acadia Valley near Oyen, Fuego Oils' No. 1, Section 34-25-4w4, is reported to have successfully completed water shut-off. It is claimed a 12-hour production test showed a flow of 34 bbls., or at the rate of 68 bbls. a day, with oil accumulating faster than the gas could raise it. Oil is reported of a good grade. Fuego's No. 2 has been located in the same section.

Wainwright Field

In the Wainwright Field, east central Alberta, there has been some renewal of drilling activity. In the past six years the field has been tested at several different points, and the existence of heavy crude at an approximate depth of 2,245 feet proved over an extensive area. Drilling to this depth is a comparatively easy matter, but owing to the proximity of water to the oil sand, the problem of actually bringing a well into production requires careful handling. Several of the earlier wells have been lost owing to water troubles. There appears to be at least two sands between 2,000 and 2,400 feet, and in several wells gas has been encountered in a still higher horizon.

Two of the recent wells have reached the Madison lime, but have not been able to make a thorough test of the lime. The Wainwright crude is a heavy asphaltic product, ranging somewhere between 18 and 23° Be., but it is thought possible deeper drilling in the lime may develop a lighter grade of crude. With the gradual increase in development work, fairly satisfactory drilling practice is being developed to handle the problems peculiar to the field, and small local refining plants provide an outlet for the heavy crude, for the handling of which the large refineries were not adapted. Some of this heavy crude has been used as fuel for drilling, and the gasoline and distillate from the local plants is marketed largely to the prairie farmers.

Associated Refineries handles extensive truck deliveries of distillates to farmers in the Wainwright area, and is making tank car shipments on a small scale to points farther east. The heavy asphaltic base left after topping is being marketed to an industrial plant at Saskatoon, Saskatchewan, for use instead of fuel oil. The product is fired through oil burners; tests made at the University of Saskatchewan show 19,140 B.t.u.'s per pound, compared with 17,670 for the normal fuel oil; while the asphaltic residue gives an additional pound to the gallon.

Wainwright Drilling

Peninsular Petroleums' No. 1, LSD 16, Section 20-45-6w4, has encountered considerable trouble from quicksands, and is shut down pending arrangements for rotary equipment. It is planned to carry hole to 2,000 feet with rotary and finish with the present cable tool equipment.

Weymarn Petroleums' No. 1, LSD 13, Section 14-47-5w4, is waiting for cable tools. One of the company's outfits now working elsewhere in Alberta will be used for this test.

Onalta Oils' No. 1, LSD 8, Section 20-45-6w4, which recently resumed drilling at 1,925 feet, has encountered a second large gas flow at 2,060 feet, with traces of oil. Anglo-Alberta Oil Co. has secured additional acreage in SE, Section 15-46-8w4, and will drill there or on a 40-acre tract adjoining Sasko-Wainwright's No. 1 producer.

Viking Gas Field

In the Viking gas field, east of Edmonton, Northwestern Utilities No. 19 is down 1,400 feet and resuming after running 10-inch casing. Northwestern's No. 20 is down 800 feet and running casing. Northwestern's No. 21 is digging cellar and moving rig from No. 18 gasser. The work is under supervision of G. W. Green, field superintendent.

Ribstone Field

In the Ribstone Field, east of Wainwright, London-Ribstone Oils' No. 2, LSD 5, Section 22-43-3w4, has resumed drilling from 1,700 feet with D. O. Credille in charge. British Permanent Oil Co. of Edmonton is reported making a location to spud in this month. Seattle interests are also reported planning one or more tests on the Ribstone structure.

In the Kinsella district, Duluth Syndicate's No. 2 has been spotted in LSD 1, Section 11-48-10w4. Duluth's No. 1, drilled last season in LSD 8, Section 29, got a heavy gas flow at 2,085 feet, and No. 2 is being located farther down the structure for oil.

British Columbia

In the Flathead Valley, British Columbia, Akamina Valley Oil Co.'s No. 1 has derrick finished. Officers are: President, J. H. Inkster; vice president, E. J. Walker; secretary-treasurer, J. E. Fitzgerald. The company holds 3,764 acres in the Flathead Valley.

On Sage Creek, Crow's Nest-Glacier Oil Co.'s No. 1 is reported resuming at around 3,000 feet with new crew and equipment. No. 2 test will probably be started this season.

Ontario Fields

In the Petrolia Field, a pumping rig on the F. W. Howlett & Sons oil property was recently destroyed by fire, with loss of $500, covered by insurance.

GULF COAST FIELDS

(Continued from Page 77)

Parish, Louisiana, which came in flowing an estimated 2,500 bbls. of pipe line oil daily from a sand at approximately 3,440 feet. At Sulphur, also in Calcasieu Parish, Union Sulphur Co. extended its production in its No. 759 fee, which flowed an estimated 2,100 bbls. daily.

Other completions of the week included Gulf Production Co.'s No. 5 Boyt, Hankamer, Liberty County, 700 bbls., 2,791 feet; Cranfill-Reynolds Co.'s No. 10 Esperson, Liberty County, 750 bbls., 3,294 feet; Humble Oil & Refining Co.'s No. 13 Sugarland, DeWalt, Fort Bend County, 416 bbls., 3,788 feet; Humble Oil & Refining Co. and Valley Oil Corp.'s No. 8 Thompson, Raccoon Bend, 600 bbls., 3,263 feet; the same operators' No. 4 Ollie Wilson, Raccoon Bend, 400 bbls., 3,124 feet; Gulf Refining Co.'s No. 18 United Land Co., Sorrento, Ascension Parish, 350 bbls., 7 per cent water, 1,615 feet; Gulf Refining Co.'s No. 21 Lutcher-Moore, Starks, Calcasieu Parish, pumping 71 bbls.; Gulf Production Co.'s No. 13 Thomas, Fannett, a former well deepened to 4,190 feet, flowing 250 bbls.; Yount Lee Oil Co.'s No. 127 McFaddin, Spindletop, pumping 30 bbls., 3 per cent water, 5,320 feet; Ocean Springs Oil Co.'s No. 1 Palmer, Hull, pumping 20 bbls. fluid, 10 per cent oil, 1,411 feet; Republic Production Co.'s No. 62 Dolbear, Hull, a workover, 350 bbls.; Empire Gas & Fuel Co.'s No. 22 Barngrover, Hull, a former well deepened 940 bbls., 3,729 feet, and M. La Rue's No. 1 Cicero, south side of Humble, a small producer, 3,920 feet, and Saxet Oil Co.'s No. 6 Herman, Pierce Junction, 350 bbls., 4,635 feet.

KANSAS FIELDS

(Continued from Page 72)

3,117 feet and running 5-inch casing at 3,107 feet. Miller and others' No. 1 Brown, SE cor. SW SW, Section 30-27-6, has been abandoned at 3,125 feet. Sanford and others' No. 1 Covert "A," NE cor. SE SW, Section 3-28-5, is dry and abandoned at 3,174 feet. Pyle & Sutter's No. 1 Smith, SE cor. NW SE, Section 34-28-6, made a 50-bbl. well in sand 2,833-40 feet.

Chase County

Chase County Gas Co.'s No. 1 Wise, NE cor. SE, Section 36-19-5, is spudding.

Coffey County

Selby Oil & Gas Co. made location for No. 4 Scott, NW cor. SE SW, Section 13-23-14. No. 3 Scott, NE cor. SE SW, Section 13-23-14, has been completed for 25 bbls. in sand 1,615-22 feet.

Cowley County

Crow and others' No. 1 Spencer, NW cor. SW SW, Section 33-31-5, is a rig. Mid-Kansas Oil & Gas Co. has the rig up for No. 1 Brewer, C NE NW, Section 21-31-6. Roth & Faurot's No. 3 Rëidy, SE cor. NE SE, Section 31-31-8, is a rig. Mid-Kansas Oil & Gas Co.'s No. 1 Harris, NE cor., Section 20-31-6, is dry and abandoned at 3,451 feet. Mission Oil Co.'s No. 2 Martin, CSL N half NW NW, Section 21-31-6, has been completed for 5,500,000 feet of gas in sand 2,206-18 feet.

Dickinson County

Seevers and others' rig is up for No. 1 Livengood, NE cor. SW, Section 13-13-2. Kruger and others' No. 1 Diehl, NW cor. NE NE, Section 17-13-4, has been abandoned at 2,946 feet.

Elk County

National Refining Co.'s No. 1 Shambaugh, SW cor. NE NE, Section 21-28-9, has been abandoned at 2,930 feet. Ramsey and others' No. 1 Denton, NW cor. NE NW, Section 10-31-8, is dry and abandoned at 2,969 feet. Union Gas Corp.'s No. 1 Ware, C NE NE, Section 5-31-9, has been deepened to 2,676 feet and abandoned. Home Oil & Gas Co.'s No. 1 Lister, C NW NW, Section 13-31-9, made 250,000 feet of gas in sand 1,495-1,530 feet.

Greenwood County

Skelly Oil Co. and Tidal Oil Co.'s rig is up for No. 21 Wick, SE cor. SW SW, Section 27-22-11. Phillips Petroleum Co. and Gore made location for No. 4 Blanck, SE cor. SW SE, Section 29-22-13. Eureka Oil Co. has the rig up for No. 1 Carter, NE cor. NW NE, Section 16-25-11. Independent Oil & Gas Co.'s No. 13 Sheppard, SW cor. SE SW, Section 2-22-10, has been completed for 100 bbls. in sand 2,068-2,116 feet. O'Neil and others' No. 1 Harlan, NE cor. NW NW, Section 34-22-11, has been completed for 150 bbls.

in sand 1,869-99 feet. Empire Oil & Refining Co.'s No. 1 Wasson, NW cor. NE SE, Section 22-22-12, made 100 bbls. in sand 1,685-1,704 feet. Simmons & Rhodes' No. 5 Luthi, NE cor. SE SW, Section 29-22-13, has been completed for 60 bbls. in sand 1,672-1,701 feet. Simmons and Amerada Petroleum Corp.'s No. 3 Ellis "B," NW cor. SE NW, Section 27-23-11, made a 60-bbl. well in sand 1,912-43 feet. Sinclair Oil & Gas Co.'s No. 1 Beavers, SE cor. NE SW, Section 25-24-12, is dry and abandoned at 2,158 feet. Waltom Oil Co.'s No. 1 Nixon, SW cor. NW SE, Section 6-24-13, has been completed for 75 bbls. in sand 1,600-09 feet. Parrish and others' No. 1 Errickson, SW cor., Section 15-24-13, is dry and abandoned at 1,616 feet. Lewis and others' No. 1 Errickson, SE cor. NW SE, Section 17-24-13, has been abandoned at 1,630 feet.

Harvey County

McPherson Oil & Gas Development Co. and others' No. 1 Palmer, C SW NW, Section 36-22-2w, has been completed for 275 bbls. in chat 2,970-3,002 feet. Margaret Gay and others' No. 1 Grove, NW cor. NE NW, Section 20-23-1w, is dry and abandoned at 3,630 feet.

Lyon County

Sheedy and others' No. 6 Hughes, CSL SW NE, Section 19-21-10, made 25 bbls. in sand 2,189-2,235 feet.

McPherson County

Slick, Pryor & Lockhart's No. 2 Gratton, SW cor. NW, Section 34-20-3w, is moving in. Waltom Oil Co. and others made location for No. 1 Hill, NW cor. SW SW, Section 17-20-2w. Barnsdall Oil Co. staked location for No. 4 Krehbiel, NE cor. NW SE, Section 4-21-3w, Voshell Pool. Dixie Oil Co. and Amerada Petroleum Corp.'s No. 2 Flook, NE cor. NW NW, Section 1-20-2w, Ritz Pool, has been completed for 1,295 bbls. in chat 2,949-65 feet. E. W. Marland, Inc.'s No. 1 Morehouse, SW cor. NW, Section 3-21-3w, has been completed for 765 bbls. in Wilcox sand 3,408-23 feet. Barnsdall Oil Co.'s No. 1 Krehbiel, SE cor. SW SE, Section 4-21-3w, Voshell Pool, has been completed for 2,086 bbls. in Siliceous lime 3,347-58 feet. No. 2 Krehbiel, SW cor. SE, Section 4-21-3w, made 1,538 bbls. after being deepened to Silicious lime 3,430-40 feet. Derby Oil Co.'s No. 1 Stucky, NE cor. SE, Section 9-21-3w, after deepening to Silicious lime 3,380-95 feet, was completed, no gauge taken. No. 2 Stucky, NW cor. NE SE, Section 9-21-3w, made 1,131 bbls. after deepening to Silicious lime 3,370-84 feet. No. 3 Stucky, NE cor. NW SE, Section 9-21-3w, has been completed for 2,656 bbls. in Silicious lime 3,382-89 feet. No. 6 Stucky, SE cor. NW SE, Section 9-21-3w, has been completed for 1,430 bbls. in Silicious lime 3,394-3,414 feet. No. 7 Stucky, SW cor. NE SE, Section 9-21-3w, made 1,570 bbls. in Silicious lime 3,395-3,409 feet. No. 8 Stucky, SE cor. NE SE, Section 9-21-3w, has been completed for 1,839 bbls. in Silicious lime 3,406-15 feet. Empire Oil & Refining Co.'s No. 1 Voshell, NE cor. SE NE, Section 9-21-3w, has been deepened to Silicious lime 3,365-83 feet and made 615 bbls. No. 2 Voshell, SE cor. NE, Section 9-21-3w, has been completed for 1,037 bbls. in Silicious lime 3,388-3,400 feet after being deepened from Wilcox sand. No. 3 Voshell, SW cor. SE NE, Section 9-21-3w, had top of Silicious lime at 3,389 feet, drilled to 3,401 feet and made 1,535 bbls. Indian Territory Illuminating Oil Co.'s No. 1 Voshell, NE cor. NW, Section 9-21-3w, has been completed for 1,003 bbls. in Silicious lime 3,449-64 feet. No. 2 Voshell, SE cor. NE NW, Section 9-21-3w, made 930 bbls. in Silicious lime 3,473-83 feet after deepening from Wilcox sand. W. C. McBride, Inc.'s No. 2 Voshell, SE cor. NE NE, Section 9-21-3w, has been deepened to Silicious lime 3,365-67 feet and made 1,500 bbls. No. 3 Voshell, NW cor. NE NE, Section 9-21-3w, has been completed for 1,290 bbls. in Silicious lime 3,337-45 feet. Mid-Kansas Oil & Gas Co.'s No. 1 Voshell, NE cor. NW NE, Section 9-21-3w, made 797 bbls. in Silicious lime 3,326-41 feet. No. 2 Voshell, NW cor. NE, Section 9-21-32, has been completed for 1,571 bbls. in Silicious lime 3,375-94 feet. No. 3 Voshell, SE cor. SW NE, Section 9-21-3w, made 1,250 bbls. in Silicious lime 3,377-90 feet. No. 4 Voshell, SW cor. NW NE, Section 9-21-3w, made 1,180 bbls. from Silicious lime 3,380-93 feet. No. 7 Voshell, SE cor. NW NE, Section 9-21-3w, has been completed for 1,275 bbls. in Silicious lime 3,340-56 feet. Shell Petroleum Corp.'s No. 1 Stucky, NE cor. SE SE, Section 9-21-3w, has been completed for 1,890 bbls. after deepening from Wilcox sand to Silicious lime 3,414-23 feet. No. 2 Stucky, NW cor. SE SE, Section 9-21-3w, an old well deepened, made 1,572 bbls. in Silicious lime 3,397-3,404 feet. No. 3 Stucky, SW cor. SE SE, Section 9-21-3w, was deepened to Silicious lime 3,417-25 feet and made 1,140 bbls. No. 4 Stucky, NE cor. SW SE, Section 9-21-3w, has been completed for 1,600 bbls. in Wilcox sand 3,364-71 feet. No. 6 Stucky, SE cor., Section 9-21-3w, was completed for 837 bbls. in Wilcox sand 3,366-77 feet. Independent Oil & Gas Co.'s No. 1 Sperling, NE cor. SW, Section 9-21-3w, is dry and abandoned at 3,691 feet. Sinclair Oil & Gas Co.'s No. 2 Voshell, SW cor. NW, Section 10-21-3w, made 1,170 bbls. in Silicious lime 3,414-21 feet. No. 3 Voshell, NW cor. SW NW, Section 10-21-3w, was completed for 1,738 bbls. after deepening to Silicious lime 3,423-27 feet. No. 4 Voshell, NW cor., Section 10-21-3w, was completed for 835 bbls. in Wilcox sand 3,438-47 feet. Shell Petroleum Corp.'s No. 2 Koehn, NE cor., Section 16-21-3w, has been completed for 687 bbls. in Wilcox sand 3,370-77 feet.

Morton County

Argus Gas Co. made location for No. 1 Chambers, C NW, Section 25-33-40w. No. 2 Armstrong is a location, C SW, Section 4-34-39w. Location was also made for No. 1 Hayward, C SW, Section 9-34-39w. Location was staked for No. 1 Dixon, C SE, Section 18-34-39w.

Reno County

Skelly Oil Co., Gypsy Oil Co., Amerada Petroleum Corp. and the Prairie Oil & Gas Co.'s No. 1 Trembly, NE cor. SW, Section 30-24-7w, is shut in for 1,750,000 feet of gas at 4,247 feet.

Rice County

Miller & Brown and others made location for No. 1 Schartz, SW cor. NW SW, Section 14-20-10w.

Russell County

Empire Oil & Refining Co. and the Prairie Oil & Gas Co. moved the rig in for No. 2 Ochs, SE cor. NE, Section 23-15-14w. No. 1 Krug, SW cor. NW NW, Section 24-15-14w, has been completed for 320 bbls. in sand 3,363-75 feet.

Sedgwick County

Shell Petroleum Corp.'s No. 7 Fischer, NW cor. SE, Section 15-26-2, is drilling at 810 feet. Wentz Oil Corp.'s No. 7 Bright, NW cor. SE NW, Section 1-26-1w, Valley Center Pool, has been completed for 519 bbls. in sand 3,345-47 feet. Smith, Ash and Shell Petroleum Corp.'s No. 1 Tripp, NE cor. SW, Section 22-26-2, is dry and abandoned at 3,340 feet after deepening from 3,315 feet. Shell Petroleum Corp.'s No. 1 Southwestern, SW cor. SE SW, Section 2-27-1w, has been deepened to 3,503 feet and abandoned.

Stevens County

Argus Gas Co. made location for No. 1 Gustafson, C SW, Section 29-32-38w.

Woodson County

Derby Oil Co. and Spencer's No. 2 Kenyon, CNL SE NW, Section 29-23-15, made 30 bbls. in sand 1,523-40 feet. Oko Oil Co.'s No. 3 Houghland, C NE NE, Section 2-24-14, has been completed for 10 bbls. in sand 1,614-23 feet.

OKLAHOMA FIELDS

(Continued from Page 68)

The royalty belongs to the stockholders of the defunct First National Bank of Wanette. Prairie Oil & Gas Co. is drilling two tests on an adjoining lease. H. F. Wilcox Oil & Gas Co.'s new test was drilling at 2,000 feet. Indian Territory Illuminating Oil Co. was drilling at 1,950 feet. The area has six drilling tests and more are expected. Wanette Drilling Co. has contracted to drill a test on the 80-acre farm owned by the defunct Security State Bank of Wanette, in the E half NW, Section 4-5-3, about 2½ miles south of the discovery. The discovery well has been holding its production, having flowed 960 bbls. on the gauge of May 2.

Western Wildcats

Activity in wildcat areas has spread to Blaine County, in the central western part of Oklahoma. Core drill machines are being used south of Okeene, in Blaine County, working in Townships 18-10w and 18-11w. The only drilling test in the county is being drilled by Washoma Petroleum Co., No. 1 Phillips, NW cor. SW, Section 13-19-10w, east of Okeene, and was drilling at 2,975 feet in lime.

The Sinclair Oil & Gas Co.'s No. 1 Howell, C SW SW, Section 14-26-24w, Harper County, the deepest test in the State, was drilling at 8,550 feet in lime.

Prairie Oil & Gas Co.'s No. 1 Wilber, NE cor. NW, Section 23-23-17w, Woodward County, encountered a sand at 6,656-60 feet with nothing showing. Tonkawa area is receiving a new drilling campaign. Operators in the district may redrill the old fields in search of deeper production. A new wildcat operation was spudding on a block of 1,400 acres during the week. The test is the Alco Royalty Co.'s No. 1 Wolf, SE cor. SW SE, Section 34-26-2w, Kay County.

Amerada Petroleum Corp. is expected to deepen one of its wells on the Goltry farm in Section 34-25-1w, in the Tonkawa Pool. Wells on this lease have been producing from the Wilcox sand for about five years. The nearest production in the Silicious lime is on the Tom Slick Oil Co.'s property in Section 35-25-1w, Kay County. The Comar Oil Co. deepened its No. 14 W. Gaum, SW cor. NE NE, Section 2-24-1w, Noble County, several years ago and it made 1,550 bbls. on its initial gauge from the Silicious lime.

Southern Fields

Magnolia Petroleum Co. has a new producer in the Madill district, in Marshall County. The company's No. 2 Coatesworth, NW cor. SW SW SW, Section 30-5s-5, on the southeast edge of the Madill Pool, is estimated to be a 250-bbl. well. Operators were pulling the casing and preparing to make a production test by pumping.

A new producer was added to the Palacine area in Stephens County, and an old gas well was showing oil. The well is in the southeast extension of the field and was completed by the Wirt Franklin Petroleum Corp., No. 1 Hartley, NW cor. SW SW, Section 10-2s-6w. Oil rose 1,000 feet in the hole after the test had been bailed down. The operators plan to make a swabbing test. Oil was encountered in sand at 2,667-76 feet. Same company's No. 1 Mullen, SE cor. NE SE, Section 9-2s-6w, was expecting to find the pay horizon in a few days the last report the test was drilling in shale at 2,868 feet. Same operator's No. 3 Spain, SE cor. SW NW, Section 9-2s-6w, was drilling in lime at 3,328 feet.

Dunmar Oil Co.'s No. 2 Randel, SW cor., Section 10-2s-6w, formerly a 50,000,000-foot gas well in sand at 2,813-45 feet, has started making oil and gauged 57 bbls. in 24 hours. The operators were rigging up to clean out and probably deepen the well in an effort to increase the flow.

Venmex Oil Co.'s No. 1 Keener, SW cor. NW SE, Section 29-1s-3w, Carter County, was drilling at 4,050 feet. Operators expect to make a test of the formation at 4,100 feet.

Oklahoma City's Shut-In Production

The initial shut-in production in the Oklahoma City Pool that has been allowed to produce for 24 hours or less as of May 3 was 397,236 bbls. The initial production of the wells and the approximate dates each will be opened for its regular producing period follows:

Company, lease—	Well No.	Bbls.	Date
I. T. I. O.:			
Watters	*3	2,204	.....
A. Bodine	6	3,612	5- 4-30
Canfield-Button	2	2,686	5- 4-30
Barker-Drake	*1	[7]2,589	5- 4-30
Unsell-Krager	*1	3,007	5- 9-30
Theimer	*1	[5]5,558	5-10-30
C. Brokaw	2	[8]563	5-10-30
Jones	*4	[4]1,954	5-18-30
Butterfield	*1	[3]3,264	5-17-30
Pasadena-Heights	*1	[5]5,982	5-16-30
Jones Community	*1	[4]4,944	5-12-30
Jones	*4	[4]1,594	5-18-30
Fortson-Farley	3	[4]15,272	5-20-30
N. Emerson	*3	[2]2,204	5-19-30
E. Fortson	2	[3]3,364	5-19-30
L. Farley	1	[4]19,833	5-21-30
A. Bodine	7	[4]609	5-23-30
Wilke-Anderson	*1	381	6- 1-30
Sudik	*1	[13]0,000	.....
L. Farley	3	[15]932	5- 5-30
Unsell-Krager	*3	[4]4,804	6- 9-30
M. Fuzzell	2	[18]1,673	6- 9-30
M. Sudik	*2	[11]1,939	6-14-30
M. Unsell	*1	[3]3,199	6-12-30
L. Jones	*6	[5]5,092	6-17-30
Ferndale	*1	[4]4,933	6-19-30
M. Knox	*1	[4]1,052	6-17-30
Warner-Farley	*2	[9]960	6-20-30
W. Canfield	*2	[19]166	6-20-30
Jones	*5	5,200	6-29-30
Warden	*1	6,758	7- 1-30
Werner-Farley	*3	[2]2,096	7- 2-30
Werner-Speegle	*2	[2]2,355	7- 2-30
H. W. Jones	*1	[13]1,129	7- 4-30
Borden	*1	[2]2,080	7- 5-30
E. Farley	*1	[5]104	7- 5-30
W. Franklin:			
Lowery	*6	[6]6,339	5-19-30
Lowery	*7	[11]1,335	5-11-30
Theimer	*1	[7]7,896	5-17-30
Eacock	*1	[6]6,838	6- 1-30
Lowery	*5	[5]5,599	6-13-30
Hoopes	*4	6,396	6-12-30
Cromwell:			
Trosper Park	*4	[2]2,975	5-10-30
Trosper Park	*10	[9]9,015	5-21-30
Sinclair:			
Vincl	*2	[3]3,310	5-14-30
Vincl	*1	14,005	5-17-30
School land 54	*2	[5]5,235	5-21-30
Vincl	*4	[22]2,385	7- 5-30
Sinclair et al:			
Kinter	*3	[4]505	5-12-30
Kinter	*4	[15]0,000	5-19-30
Kinter	*5	255	5-28-30
Kinter	*7	[10]630	5-29-30
Coline:			
Olds	*5	[13]3,467	5-16-30
Warren	4	[11]1,622	5-13-30
Warren	7	[15]5,000	6- 1-30
Clauer	*2	5,130	5-23-30
Olds	*9	[16]1,169	6- 7-30
Olds	*7	[17]819	6- 8-30
Warren	*3	[6]6,914	6-30-30
Slick:			
Hoopes	*1	[1]1,064	5-17-30
Hoopes	*2	[6]6,758	5-20-30
Shell:			
Petty	*2	[12]260	5-13-30
Heenan & Coe:			
Cunningham	*1	[12]6,904	5-30-30
Skelly:			
Hoopes	*3	[1]322	6- 4-30
L. Jones	*3	[5]5,092	6-14-30
Dunn	*1	19,580	6-28-30
Hoopes	*2	[1]1,846	6-30-30
Hoopes	*5	[20]2,514	7- 1-30
Hoopes	*7	[21]1,954	7- 1-30
Hoopes	*4	[20]4,976	7- 2-30
Mid-Kansas:			
Mollman	*2	2,492	6- 5-30
Mollman	*3	[1]1,726	7- 3-30
Tom Slick Oil Co.:			
Bailey	*1	16,758	6-27-30
Houghton	*1	[2]8,873	6-27-30
Hall & Briscoe:			
Lindsey	*1	[5]5,186	7- 2-30
Total	75	397,236	

*Well's producing from the Simpson sand. All others are producing from the Arbuckle lime.

[1]Estimated. [2]Thirteen hours. [4]Twelve hours. [5]Five hours. [7]Nineteen and one-half hours. [9]Twenty hours. [10]Twenty-one hours. [11]Nineteen hours. [12]Twenty-two hours. [13]Eight and one-half hours. [14]One and one-quarter hours. [15]Six and one-third hours. [16]Eighteen and one-quarter hours. [17]Sixteen hours. [18]Three hours. [19]Thirty-five minutes. [20]Fourteen and one-quarter hours. [21]Nine and three-fourths hours. [22]Six hours.

These notations indicate the number of hours the wells produced on their initial production test.

Actual Field Production

The actual production from the Oklahoma City Pool for the seven days ending May 12, was as follows:

	Bbls.	Wells prod.	Wells completed
April 29	144,857	44	211
April 30	108,238	38	212
May 1	116,482	45	213
May 2	131,756	47	214
May 3	127,006	50	214
May 4	113,699	46	215
May 5	159,017	50	217

Oklahoma City Shipments

The daily average pipe line and tank car shipments from the Oklahoma City Field averaged 92,491 bbls. for the week ending April 30. The total shipments and the daily averages for the week by companies were as follows:

Company—	Bbls.	Daily average
Empire	84,154	12,022
I.T.I.O.	66,582	9,511
Magnolia	92,272	13,182
Oklahoma	85,510	12,216
Shell	27,018	3,860
Sinclair	103,473	14,782
Prairie	129,326	18,475
Tidal	58,821	8,403
Total	647,157	92,491

Greater Seminole Production

A much larger decline in the Greater

DITCHING at MINIMUM COST

Send today for our new catalog No. 10 illustrated above, giving full information and specifications.

Precision built of the finest steels that metallurgy has to offer for each particular purpose, according to the most advanced engineering principles, the Baby Digger is astonishingly rugged and powerful.

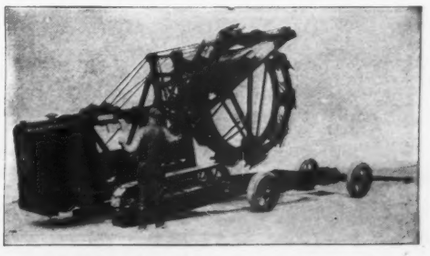
Its husky power plant delivers more than ample power—power that is transmitted with maximum efficiency through a type of design and construction that is unparalleled in the excavating field.

The Baby Digger uses wheel type trenching which is admittedly the most correct method of digging for the shallower classes of trench. It is mounted on full crawler tracks which affords maximum flexibility and ease of handling. Its weight is carried low, assuring unusual stability for working over rough places.

The Baby Digger is thoroughly equipped with anti-friction bearings throughout, and enclosed worm gear reduction units running in oil conserve power and eliminate working parts.

Incorporating as it does in one compact unit, speed, strength and economy of operation, you will find the Baby Digger delivering maximum trench footage at minimum cost.

Above illustration shows Baby Digger in operation on pipe line job near Vernon, Texas.



Shows Baby Digger being loaded on its trailer under its own power for quick transportation.

THE CLEVELAND TRENCHER COMPANY

"PIONEERS OF THE SMALL TRENCHER"

20100 St. Clair Avenue Cleveland, Ohio

THE CLEVELAND BABY DIGGER

Seminole production occurred during the week ending April 30, than in the preceding week. The total production of the important areas was 284,268 bbls., a decrease of 15,090 bbls. daily. The Seminole area averaged 208,499 bbls. from 1,851 wells. The daily average gauges for the different pools for the same seven days were as follows:

Pool—	Wells	Bbls.
Little River	368	37,328
East Little River	69	16,294
Carr City	57	8,588
Maud	137	4,149
Mission	104	11,507
Bowlegs	282	19,591
Earlsboro	300	36,095
East Earlsboro	148	41,387
Seminole	266	19,829
East Seminole	33	3,695
Searight	87	10,037
Allen	258	19,530
Asher	26	2,095
Konawa	43	8,491
St. Louis	484	35,219
Sasakwa	53	10,434
Total	2,715	284,268

Seminole Oil Shipments

Oil shipments for the seven days ending April 30, including the pipe line and tank cars, amounted to 209,485 bbls. from the Seminole Field. The shipments exceed production by approximately 1,000 bbls. daily. The daily average shipments by companies were as follows:

Company—	Bbls.
Barnsdall	2,462
Champlin	2,445
Continental	1,186
Consolidated	430
Cosden	5,742
Empire	2,731
Gulf	25,618
Magnolia	12,950
Oklahoma	25,270
Prairie	21,288
Producers & Refiners	2,211
Pure	5,050
Deep Rock	3,042
Shell	11,992
Sinclair	50,782
Texas	12,937
Tidal	14,079
White Oak	2,465
Total	202,680
Tank cars	6,805
Grand total	209,485

Caddo County

Mid-Kansas Oil & Gas Co. and Ramsey Petroleum Co. made location for No. 9 Wade, NW cor. SW NE SW, Section 2-5-9w. No. 1 Rowe, SW cor. NW NE, Section 36-6-10w, has been deepened again and made 1,634 bbls. in sand 3,312-16 feet.

Cleveland County

Indian Territory Illuminating Oil Co. moved the rig in for No. 2 Reynolds, SE cor. NE NW, Section 6-10-2w, Oklahoma City Field. Phillips Petroleum Co., The Texas Company, the Prairie Oil & Gas Co. and T. B. Slick's No. 1 Reynolds, NE cor. SE NW, Section 6-10-2w, is a location.

Garfield County

Continental Oil Co. made location for No. 1 Meisner, NE cor. NW NW, Section 10-20-4w.

Hughes County

Independent Oil & Gas Co.'s No. 1 Johnson, C NE NE, Section 33-9-8, is dry and abandoned at 4,443 feet.

Oklahoma County

Anderson & Prichard made location for No. 1 Pest House, SW cor. NW, Section 1-11-3w, Oklahoma City Field. Indian Territory Illuminating Oil Co. staked location for No. 1 Phillips, SE cor. NW SW, Section 1-11-3w. T. B. Slick and others' No. 2 Baker, CNL SW SE NW, Section 1-11-3w, is a cellar. The cellar has also been dug for No. 3 Baker, CSL NW SE NW, Section 1-11-3w. Location has been made for No. 4 Baker, NE cor. SW NW, Section 1-11-3w. Location has been staked for No. 2 Milner, CNL SE SW NW, Section 1-11-3w. Anderson & Prichard made location for No. 1 Gibbons, SE cor. NE NE, Section 2-11-3w. Hall & Briscoe's No. 1 Mueller, SW cor. SE NW, Section 2-11-3w. A. V. Kedney has the cellar dug for No. 1 Seal-Key, NE cor. NW SW SW, Section 2-11-3w. Tom Slick Oil Co. and Indian Territory Illuminating Oil Co. made location for No. 1 Huddleson, SE cor. SW NW, Section 14-11-3w. Coline Oil Co. has the cellar dug for No. 12 Clauer, SE cor. NE SE, Section 25-11-3w. Indian Territory Illuminating Oil Co. staked location for No. 1 Missouri, Kansas & Texas Railroad, SE cor. SW, Section 35-12-3w. The rig has been moved in for No. 11 Emmerson, SW cor. NW SW, Section 30-11-2w. No. 5 Salasman, SE cor. SW NW, Section 32-11-2w, is a rig on the ground. Anderson & Prichard made location for No. 2 Pest House, NW cor. SW NW, Section 1-11-3w.

Indian Territory Illuminating Oil Co. made location for No. 1 Carrico, NE cor. SW NW, Section 14-11-3w. Location has also been made for No. 2 Habegger, SW cor. SE NW, Section 14-11-3w. No. 3 Pasadena Heights is a location, NW cor. NE SW, Section 14-11-3w. No. 1 Huffman is a location, NE cor. NW SW, Section 14-11-3w.

Skelly Oil Co.'s No. 1 Dunn, C E half NW SW, Section 1-11-3w, has been completed for 20,590 bbls. in sand 6,365-6,440 feet. Tom Slick Oil Co.'s No. 1 Bailey, NW cor. SW, Section 1-11-3w, was completed for 16,758 bbls. in Arbuckle lime 6,473-82 feet. Tom Slick Oil Co. and Atkinson's No. 1 Houghton, CNL NE NW SW, Section 1-11-3w, has been completed for 16,774 bbls. in sand 6,374-6,452 feet. Indian Territory Illuminating Oil Co.'s No. 1 Ferndale Community, NE cor. SE NE, Section 11-11-3w, flowed 8,505 bbls. in 12 hours from sand 6,418-6,520 feet. Tom Slick Oil Co.'s No. 2 Glidden, SE cor. SW SE, Section 13-11-3w, originally completed at 6,662 feet, has plugged back to 6,225 feet and shut in for 23,000,000 feet of gas. Hall & Briscoe's No. 1 Lindsey, NE cor. SE NW, Section 14-11-3w, made 5,186 bbls. in 12 hours from sand 6,389-6,461 feet. Indian Territory Illuminating Oil Co.'s No. 1 May Knox, NE cor. SE, Section 14-11-3w, has been completed for 1,608 bbls. in 12 hours from sand 6,285-6,422 feet. No. 3 Werner-Farley, SW cor. NE SE, Section 23-11-3w, has been completed for 2,096 bbls. in 12 hours in sand 6,311-6,570 feet. No. 2 Williamson-Canfield, SW cor. SE SW, Section 24-11-3w, made 1,000 bbls. in 12 hours from sand 6,327-6,411 feet. Coline Oil Co.'s No. 3 Warren, NW cor. SW SW, Section 18-11-2w, has been completed for 6,914 bbls. in 12 hours in Arbuckle lime 6,025-6,327 feet. Sinclair Oil & Gas Co. and Amerada Petroleum Corp.'s No. 9 Kinter, SW cor. NW SE, Section 30-11-2w, had sand at 6,265 feet, total depth 6,365 feet and made 150 bbls. Indian Territory Illuminating Oil Co.'s No. 5 Jones, SE cor. NW, Section 31-11-2w, has been completed for 5,199 bbls. in 12 hours in sand 6,493-6,625 feet. Skelly Oil Co.'s No. 5 Hoopes, NW cor. NE NE, Section 31-11-2w, made 4,134 bbls. in sand 6,293-6,380 feet. Tom Slick Oil Co.'s No. 1 Hoopes, NW cor. SW NE, Section 31-11-2w, made 4,916 bbls. in Arbuckle lime 6,622-6,634 feet.

Osage County

Winona Oil Co.'s No. 14, NW cor. NE NE, Section 20-29-9, is a machine rigging up. Peters Petroleum Corp. and Producers & Refiners Corp.'s No. 8, SW cor., Section 22-27-11, is a machine moving in. Atlantic Oil Producing Co. is moving the machine in for No. 6, SW cor. SE SW, Section 19-26-8. H. E. Hulen's No. 3, NE cor. NW SE SW, Section 3-24-11, is a machine. Western American Oil Co.'s No. 1, NW cor. SE, Section 28-23-6, is spudding. Mid-Co Petroleum Co.'s No. 20, NW cor. NE SE, Section 18-22-10, is rigging up. W. D. Gray made location for No. 6, SW cor. NE NW, Section 19-22-11. Boston Heights Oil Co. and others' No. 3, SE cor. NE SE, Section 10-21-8, is a rig. Millard & Stanley's machine is on the location for No. 2, SE cor. SW NW NW, Section 6-21-9. Winona Oil Co.'s No. 13, SW cor. NE NE, Section 20-29-9, has been completed for 50 bbls. in Peru sands 1,553-86 feet. Peters Petroleum Corp. and others' No. 5, SE cor. NE NW, Section 27-27-11, has been completed for 30 bbls. in Bartlesville sand 1,648-66 feet. Utilities Production Co.'s No. 21, SW cor. NW, Section 6-26-7, has been completed for 5,500,000 feet of gas in sand 1,383-1,403 feet. Cities Service Gas Co.'s No. 92, C NW NW, Section 15-26-9, is dry and abandoned at 2,525 feet. Frank Haskell and others' No. 56, SE cor. NE, Section 21-25-12, has been completed as a dry hole at 1,525 feet.

Jefferson County

The Prairie Oil & Gas Co.'s No. 2 Seay, C SW NE SW, Section 34-6s-5w, made 45 bbls. in sand 1,578-87 feet.

Pawnee County

Mid-Continent Petroleum Corp. made location for No. 36 School Land, NE cor. SW SE, Section 36-20-5. Peter Adamson, Jr.'s No. 1 Ackley, NW cor. SE NW SE, Section 14-20-9, is spudding. Hay and others' No. 6 Copeland, NE cor. SW SW, Section 26-20-9, is rigging up. Cimarron Oil Co. is moving in a machine for No. 3 Smelzer, SW cor. NW NW, Section 29-20-9. Mannford Development Co.'s No. 2 Fleming, SW cor. NW NW, Section 15-20-9, is dry and abandoned at 2,225 feet.

Pottawatomie County

Transcontinental Oil Co. made location for No. 2 Miller, SW cor. NE NE, Section 22-6-3, west of Asher. The Prairie Oil & Gas Co. made location for No. 1 Tomlin, SW cor. NW NW, Section 23-6-3. James Guinn's No. 1 Earlsboro Townsite, Block 10, NE cor. SW NW, Section 8-9-5, made 255 bbls. from Wilcox sand 4,367-85 feet. Magnolia Petroleum Co.'s No. 1 Disch, NE cor. SE SE, Section 12-7-4, made 57 bbls. at 4,040 feet after it was plugged back from 4,143 feet.

Bryan County

W. G. Endicott and others' No. 1 Craige, C NW NE, Section 36-9s-9, is dry and abandoned at 2,160 feet.

Carter County

K. W. B. Drilling Co. moved a machine in for No. 1 Noble, SW cor. NW SE, Section 14-2s-2w. Magnolia Petroleum Co.'s No. 6 E. Gill, NW cor. NE SE, Section 23-1s-3w, has been completed for 41 bbls. in broken sand 2,685-2,730 feet.

Creek County

Gled Oil Co. and others made location for No. 1-A Timothy, NE cor. SE, Sec-

The view of the Oklahoma City Field, in Oklahoma County, Oklahoma, on this page was taken from the Indian Territory Illuminating Oil Co.'s No. 2 Vincent (Mary) Sudik in Section 6-10-2w, showing the Sinclair Oil & Gas Co.'s Vencl lease in the foreground. The picture was taken April 21, 1930. The Sudik lease is in the south end of the field and the road in the foreground runs east and west. On May 5 there were 213 producing wells, a few of them, not more than half a dozen, producing gas exclusively. Many of the wells are entirely shut in, and those that produce are permitted to do so only at specified periods and the production of the field is kept down to pipe line requirements.

tion 36-19-7. Abbott and others staked location for No. 1 Allen, NW cor. SE NW, Section 12-19-9. Sells & Matych's No. 1-A Bough, NW cor. NE NE, Section 22-19-9, is rigging up. W. O. Allen and others' No. 1 Johnson, NW cor. SW SW, Section 3-17-10, is a machine rigging up. Wilcox & Whitten's No. 5 Smith, NE cor. SE SE NW, Section 11-17-10, is drilling at 1,200 feet. Carter Oil Co.'s No. 1 Miller, NW cor. SW NE, Section 12-17-10, has been abandoned at 2,876 feet. Olean Petroleum Co.'s No. 5 Bigpond, NE cor., Section 36-15-7, has been abandoned at 3,297 feet.

Lincoln County

Magnolia Petroleum Co. moved the rig in for No. 1 Winship, NE cor. SW, Section 2-13-4.

Marshall County

Bilbo Oil Trust Co. has a machine in for No. 5 Null, NW cor. SW NE NW, Section 24-5s-5, Madill Pool. Flemming & Kimbrell's No. 5 H. R. Null, SW cor. NE NW, Section 24-5s-5, is drilling at 310 feet. F. W. Merrick moved a machine in for No. 18 Null, NW cor. SE NW, Section 24-5s-5. Max Westheimer's No. 3 Davis-Sullivan, SW cor. SE NW, Section 30-5s-6, is a machine. Bilbo Oil Trust Co.'s No. 10 Talifero, NW cor. SW NE SE, Section 14-5s-5, is a dry hole at 794 feet. No. 4 Null, SW cor. NE NW, Section 24-5s-5, has been completed for 100 bbls. at 661 feet. Flemming & Kimbrell's No. 4 R. H. Null, SE cor. SW NE NW, Section 24-5s-5, is making 40 bbls. from sands 583-89 feet and 614-30 feet. Goddard Oil Co.'s No. 2 Marshall, NW cor. NE NE SW, Section 30-5s-6, is producing 30 bbls. from sand 654-63 feet. Max Westheimer's No. 2 D. Sullivan, SW cor. SE NW, Section 30-5s-6, is dry and abandoned at 753 feet.

Muskogee County

C. O. Buckles' No. 6 M. Barnett, CNL NE SE, Section 8-15-15, is drilling at 1,625 feet. P. Boyle and others' No. 4 I. Russell, SW cor. NE SE, Section 19-15-16, is drilling at 300 feet. Ash Brothers' No. 1 Spaulding, NE cor. NW SE, Section 8-15-18, is drilling at 100 feet. J. L. Haner's No. 6 M. Stedham, NW cor. NE NE SE, Section 8-15-18, is rigging up. H. L. Jolly's No. 1 M. Brown, SE cor. NE NW NE, Section 8-15-18, is spudding. E. A. Hollis and others moved a machine in for No. 1 M. Stedham, NE cor. NW NE SE, Section 8-15-18. C. F. Finefield and others' No. 1 P. Rentie, SE cor. NE NW, Section 9-15-18, is a machine. The machine is on the location for No. 2 P. Rentie, SE cor. SW NE NW, Section 9-15-18. J. M. Foltz's No. 2 L. Mackey, NE cor. SW NE SW, Section 9-15-18, is a machine. The machine is in for No. 3 Spaulding, NW cor. SE NE SW, Section 9-15-18. J. E. Wallace's No. 15 V. Colbert, CEL SW NE, Section 14-14-14, is drilling at 400 feet. J. L. Haner's No. 5 M. Stedham, NE cor. SE, Section 8-15-18, has been completed for 95 bbls. in sand 833-44 feet. J. M. Foltz's No. 1 Spaulding, NW cor. NE SE SW, Section 9-15-18, has been completed for 150 bbls. in sand 1,043-53 feet. E. A. Hollis and others' No. 1 P. Rentie, SW cor. NE SW SE, Section 9-15-18, is a dry hole at 1,177 feet. W. J. Metzger's No. 2 E. Harrison, C NW SW, Section 13-14-18, has been abandoned at 1,121 feet. Bement Oil & Gas Co.'s No. 1-A J. Tobey, NE cor. NW SW, Section 15-13-16, has been abandoned at 2,306 feet. Midwestern Oil & Gas Co.'s No. 1 B. Mulkey, C NW NW, Section 31-12-19, has been completed for 3,000,000 feet of gas in sand 552-61 feet.

Okfuskee County

Suppes & Robinson, No. 3 B. Sever, C SW SE, Section 35-11-9, is a machine. Atlantic Oil Producing Co. has a machine in for No. 3 Micco, CWL SW SW, Section 12-10-11. The Prairie Oil & Gas Co.'s No. 1 Day, SW cor., Section 4-13-10, has been completed for 150 bbls. in Wilcox sand 3,375-90 feet. Mid-Continent Petroleum Corp.'s No. 5 Dindy "B," C SW NE, Section 31-11-11, has been completed for 23,000,000 feet of gas in sand 3,090-97 feet. Transcontinental Oil Co.'s No. 1 Lashley, SW cor. NW, Section 25-10-10, has been completed for 41,948,000 feet of gas in sand 3,205-30 feet. Atlantic Oil Producing Co.'s No. 1 Fife, NE cor. NW, Section 7-10-12, has been abandoned at 3,097 feet.

Okmulgee County

J. H. Rebold has the cellar dug for No. 4 Brooks, NW cor. SW NE, Section 6-15-13. No. 1 D. Hawkins, SW cor. NW NE, Section 6-15-13, has been completed for 30 bbls. in sand 2,499-2,512 feet.

Payne County

Deep Rock Oil Corp.'s No. 3 Echo Hawk heirs, NE cor. SW NE, Section 4-18-5, has been completed for 60 bbls. in sand 3,524-29 feet. No. 7 Sharrum, NW cor. SW NW, Section 5-17-4, is dry and abandoned at 4,290 feet.

Pontotoc County

Benedum-Trees Oil Co. made location for No. 1 Norris, NE cor. NW SW, Section 30-5-5, Bebee Pool. Dixie Oil Co.'s No. 1 Roper, NW cor. SE NW, Section 32-5-5, is drilling at 2,517 feet. Sunray Oil Corp.'s No. 16 McCall, SW cor. NW, Section 17-5-8, is drilling at 2,200 feet.

Seminole County

Carter Oil Co. and Denver Producing & Refining Co. moved the rig in for No. 1 Cheparney, SE cor., Section 30-10-6. Magnolia Petroleum Co. made location for No. 4 Grounds, NW cor. SE NW, Section 23-9-5, South Earlsboro Pool. Amerada Petroleum Corp. and others' No. 6 Grounds, NE cor. SW NW, Section 23-9-5, is a cellar. Carter Oil Co. staked location for No. 3 Rogers, NE cor. SW SE, Section 2-8-5, Mission Pool. Barnsdall Oil Co. has the cellar dug for No. 3 Johnson, SW cor. SE SE, Section 17-6-6, Konawa Pool. Mid-Continent Petroleum Corp. made location for No. 1 Harjoche, NE cor. SW, Section 17-6-6. Hilton Phillips and others' No. 3 Hyde, NW cor. SE NE, Section 20-6-6, is a cellar. Twin State Oil Co. has the rig on the ground for No. 3 Charlie "A," NW cor. NE NE, Section 20-6-6. W. B. Pine made location for No. 1 Cheparney, SE cor. NW NE, Section 20-6-6. Gypsy Oil Co. made location for No. 1 T. Harjo, SE cor. NE SW, Section 20-6-6. Mid-Continent Oil & Gas Corp. has dug the cellar for No. 1 T. Harjo, NE cor. SW SW, Section 20-6-6. Barnsdall Oil Co. moved the rig in for No. 1 A. Harjo, SE cor. NE NW, Section 20-6-6. Magnolia Petroleum Co.'s No. 5 Reed, NE cor. NW SE, Section 13-5-7, is drilling at 2,110 feet. Carter Oil Co.'s No. 3 Chowning, SE cor. NW SW, Section 19-9-6, East Earlsboro Pool, flowed 2,640 bbls. from Wilcox sand 4,125-53 feet. Sinclair Oil & Gas Co.'s No. 3 Thompson "B," NE cor. SE SW, Section 18-9-7, East Seminole Pool, made 373 bbls. from Wilcox sand 4,256-74 feet. Carter Oil Co.'s No. 2 S. Mecco, NW cor. SE NW, Section 9-8-6, is dry and abandoned at 4,421 feet. Magnolia Petroleum Co.'s No. 1 M. Reed, SW cor., Section 33-8-7, has been abandoned at 3,361 feet. No. 2 Coker, SE cor. SW SE, Section 13-7-6, Little River Pool, has been completed for 112 bbls. in Wilcox sand 4,110-29 feet. Producers & Refiners Corp.'s No. 3 A. Davis, SW cor. NE, Section 13-7-6, flowed 390 bbls. in 18 hours from sand 3,194-3,217 feet. Magnolia Petroleum Co.'s No. 1 Reed, NE cor. SE SW, Section 8-7-7, East Little River Pool, is dry and abandoned at 3,415 feet. Magnolia Petroleum Co.'s No. 1 R. Jackson, SE cor. SW NE, Section 17-7-8, Holdenville area, drilled to 4,254 feet in Wilcox sand, plugged back to 2,930 feet and has been shut in for 100,000,000 feet of gas. Empire Oil & Refining Co. and others' No. 2 Rogers, SE cor. SW NW, Section 9-6-6, swabbed 120 bbls. from sand 2,918-60 feet. No. 1 Louisiana, NW cor. NE SE, Section 16-6-6, has been completed for 22 bbls. in Simpson sand 3,674-3,707 feet. Magnolia Petroleum Co.'s No. 1 P. Johnson, NE cor. SW NW, Section 17-6-6, pumped 9 bbls. from sand 2,847-56 feet. Harris and others' No. 1 Burgess, NW cor. SW, Section 21-6-6, Konawa Pool, is dry and abandoned at 3,088 feet. Mid-Continent Petroleum Corp.'s No. 1 Caesar, NW cor. NE SW, Section 21-6-6, flowed 170 bbls. from sand 2,895-2,903 feet. Anderson and Gypsy Oil Co. and others' No. 1 Molly, NW cor. NE NE, Section 30-5-6, has been abandoned at 3,062 feet.

Stephens County

Barney Coolburn made location for No. 1 Funk, SW cor. SE, Section 19-1-8w. Carl Wylie and others' No. 1 Fair, SE cor. SW SE, Section 33-1-8w, is rigging up. American Pipe Line Co.'s No. 11 Nigh, NE cor. SE NW, Section 34-1s-8w, is pumping 35 bbls. from sand 1,971-75 feet. Magnolia Petroleum Co.'s No. 1 Crews, NW cor. SE NE, Section 12-1s-4w, has been completed for 48 bbls. in sands 2,770-88 feet and 3,206-24 feet. George Pace and others' No. 5 A. Bristowe, NW cor. SW NW SW, Section 18-2s-7w, has been abandoned at 1,433 feet. Pace and others' No. 4 Watkins, SW cor. NW SE, Section 21-2s-7w, is making 250 bbls. from sand 1,721-28 feet.

Tulsa County

Mays Brothers' No. 1 Robinson, NE cor. SW SW, Section 19-19-15, has been abandoned at 1,710 feet.

Wagoner County

W. J. Metzger and others' No. 1 J. Ford, CNL SW, Section 5-15-18, is a machine.

CALIFORNIA FIELDS

(Continued from Page 81)

This well would probably have been good for better than 1,000 bbls. except for an unfortunate fishing job which developed just previous to completion as it shows a pressure of 610 pounds. It was bottomed at 7,015 feet with a string of 4¾-inch landed at 6,476 feet. The top of the unrecovered fish consisting of drill pipe is at 6,484 feet. The Chiksan Oil Co. chalked up a new well when No. 1 Robertson was recompleted flowing 550 bbls. of clean 30.2 gravity pipe line oil per day from 7,066 feet. The Rawco Oil Co.'s No. 1 Noll, a new well, was good for 458 bbls. of clean 29.6 gravity oil daily upon completion at 6,696 feet. Dabney & Johnston also brought in a satisfactory completion, No. 48 Signal, a new well being good for 401 bbls. of clean 29.1 gravity oil per day from 6,738 feet, the water shutoff being effected with a string of 9-inch landed at 6,521 feet. The Italo Petroleum recompleted No. 1 Conklin after redrilling and deepening it to 6,672 feet, from which depth it was good for 140 bbls. This hole was originally carried down to 6,956 feet but was subsequently plugged back and finished with a 4¾-inch liner carrying 235 feet of perforated. The Texas Company finished No. 2 Fee doing 360 bbls. from 5,985 feet, the hole having been finished with a 6⅝-inch oil string. The Greek American Oil Co. killed No. 1 Signal a few days ago and this well, which recently came in doing 780 bbls. from 6,770 feet, will be put on a compressor to stimulate production as the output has dropped to approximately 75 bbls. There are still 164 incompleted drilling projects under way in the Long Beach Field, many within striking distance of completion.

Midway-Sunset

There were no new wells finished in

the Midway-Sunset Field of Kern County but a check indicates the probable completion of three new projects out in the Maricopa Flats section within ten days. In the Kern River Field the Bishop Oil Co. finished No. 18 Fano, a new well pumping 112 bbls. of 15.5 gravity oil per day from 2,020 feet, and the Chanslor-Canfield Midway Oil Co. finished No. 33 Fee in the same area pumping 196 bbls. of 15.1 gravity oil initially from 2,054 feet. Both wells are out in the West Front section. In the Mount Poso Field of Kern County, the General Petroleum increased its list of producers by completing No. 53 Heisen doing 172 bbls. of 15.5 gravity oil on the beam from 1,560 feet. Excavation work on the new reservoir which the Petroleum Securities is building near Bakersfield was recently completed and the container should be ready for use shortly. The Petroleum Securities is building this reservoir for storing its production from Mount Poso and in the meantime current production is being stored in two 80,000-bbl. steel tanks. The inability of this company to negotiate a contract for the sale of this oil has kept the greater part of its producing wells idle until the reservoir has been completed. At McKittrick, the Ozena Oil Co. finished No. 2 Kendon, a new well pumping 30 bbls. of clean 21.4 gravity oil from 2,735 feet. The Standard Oil Co. has started rig construction for No. 45 Tupman, a new well in the Elk Hills Field of Kern County, and when drilling operations actually get under way it will mark the end of long inactivity. The only drilling done in this field in the past several years was a deep test subsequently abandoned as a duster.

Playa Del Rey

Considerable new work is getting under way in the Playa Del Rey Field of Los Angeles Basin and a number of additional locations are expected to be staked soon. The action of the Ohio Oil Co. in making preparations to complete No. 2 Recreation stimulated interest to a considerable extent and if this registers substantial production it will probably cause a number of operators to start immediate work. Many are holding back to get the lay of the land before starting actual work as some are still dubious whether drilling will be justified. The first well has less than 300 feet of oil sand and is reported to have drilled into granite in the bottom of the hole. No intensively drilled field in Los Angeles Basin with less than 300 feet of oil sand has ever paid out and it is not likely this precedent will be voided at Playa Del Rey if similar conditions exist. Subsequent drilling will likely reveal the existence of an upper zone and a larger amount of oil sand in the Recreation zone which is of Miocene age. Lawndale, Los Cerritos and Alamitos Heights all failed to yield large consistent production due to the absence of a zone of sufficient thickness to sustain intensive drilling. Another few weeks should determine the importance of Playa Del Rey. Limited correlation work undertaken up to the present indicates the field is dipping away from the area now undergoing development. This is important.

Wildcats

The Union Oil Co. of California has just staked location for a new wildcat at Orchardale, approximately 10 miles east of Santa Fe Springs in what appears to be an exceptionally promising area. The acreage involved was tied up several months ago and lease maps indicate the company has acquired what appears to be the entire potential productive acreage. Several wildcats have been drilled in this general vicinity but none was close enough to the acreage involved to have any connection with it. Shortly after acquiring its Orchardale holdings the Union proceeded to drill a number of shallow structure survey holes in an effort to determine the approximate trend of the structure. This work tended to indicate the existence of a structure, although survey work of this kind is necessarily somewhat inaccurate because of the erosion factor.

The Union has killed No. 1 Sansinena, a wildcat in the Coyote section southeast of the Whittier Field, and will carry this project down for a conclusive deep test. This well showed a potentiality of approximately 50 bbls. per day from 2,950 feet, although the outcome was not entirely satisfactory due to water trouble. The Standard recently staked location for a new wildcat to be drilled on Irvine Island in Newport Bay, a few miles southeast of the Huntington Beach Field, and while no actual work has yet been started rig material will be on ground within a short time after the necessary drilling permits have been secured. The Olympic Oil Co., which is drilling a wildcat in the Calabasas area, has reached a depth of 3,650 feet and while no unusual evidence of production has been logged it still has a chance of picking up an oil sand. Regardless of the outcome from an oil production standpoint, this well will be a boon to the immediate area as it developed an artesian water flow of approximately 10,000 bbls. per day from above the 2,500-foot level. This was the first big water well to be encountered in this area as heretofore agriculturists have been unable to develop sufficient water to irrigate adjacent farm lands.

CLOSER STUDY OF GAS FIELDS IS NEEDFUL

(Continued from Page 51)

10 per cent of the original volume has been taken from the sand and 90 per cent of the original volume remains in the sand.

Recoverable Gas

Both the saturation and pressure volume methods of estimating gas reserves are based upon Boyle's law, which states that with a constant temperature the volume of gas varies inversely with the pressure. The strict mathematical application of the two methods, therefore, is for perfect conditions only; that is, the

AERIAL VIEW OF THE NORTH DOME, KETTLEMAN HILLS FIELD

actual volume of pore space in the sand remains constant for the life of the field; the gas is such that it complies strictly with Boyle's law at all conditions of pressure and volume; the gas itself does not change as the field grows older and gas is produced from it; and other conditions are assumed that do not apply strictly in the different gas fields. All factors that have any influence on the production of the gas are therefore considered carefully in making estimates. In addition, it is necessary to study a gas area constantly; and if conditions for the basis of the original estimate are changed, revised estimates are made in time for revision of operating conditions.

The consideration of the encroachment of edgewater is of particular importance, especially if the pressure volume method of estimation is used. This encroachment actually decreases the volume of the reservoir. The effect of the water pressure increases as the gas pressure declines; therefore, the rate of decrease of the volume of the reservoir is more rapid at lower rock pressures. If original estimates of gas reserves are based on only a short period in the life of a gas area and there is edgewater under a relatively high head of pressure in the producing sand, the estimate of the original volume of gas in the sand is high. In other words, the actual volume of gas produced from the area per pound decline in rock pressure is not constant but lessens as the rock pressure declines. This is true because the assumption is made that the actual volume of the reservoir remains constant for a definite pressure drop, whereas it actually is less at the lower pressure of a pressure drop.

High Pressures Usual

The gas usually is in the reservoir at high pressures. Under such conditions, Boyle's law is not strictly applicable. There are more cubic feet of atmospheric gas in the reservoir than Boyle's law indicates. The deviation is greatest at the maximum pressure and decreases as the pressure decreases. If volume of gas produced is plotted as abscissae against pressure in the sand as ordinates, the actual cumulative production curve is flatter at higher pressures when compared to the estimated cumulative production curve and gradually becomes steeper at lower pressures. The total cumulative production is greater than the estimated cumulative production.

In using either method of estimating reserves, correct rock pressures are essential. First, enough wells should be "closed in" for a sufficient length of time to insure conditions of equilibrium in the sand. Second, the pressure due to the weight of the column of gas should be added to the pressure observed at the well head to determine the true rock pressure in the sand. This item, sometimes, is of considerable importance. For instance, a gas well with an absolute pressure at the well head of 1,000 pounds per square inch, a depth of 2,500 feet with a gas of specific gravity of 0.7 has a pressure due to the weight of the column of gas of approximately 89 pounds per square inch.

In many gas fields the apparent closed-in pressures on gas wells located in different parts of a field vary. Also, the actual rate of production under the same pressure conditions are different for the different wells. Under such conditions, one plan is to estimate the reserve by subdividing the field into different areas and considering each area a separate unit. The subdivision depends upon the conditions in the field, and wells with approximately the same rock pressures should be included in their respective areas. The total volume of reserve gas is the sum of the reserves for all of the areas. Another method of estimating reserves under conditions of nonequalized rock pressures is to determine the weighted average rock pressure of the producing sand and then calculate the reserves by use of the pressure volume method. The field is divided into a large number of small subdivisions. The ratio of the area of each small subdivision to the area of the field is multiplied by the average rock pressure of each subdivision, and the sum of these products is the average weighted rock pressure for the entire field.

There is a good deal of difference between the actual volume of gas in a producing sand and the volume of gas that can be produced profitably from a sand. The gas that can be produced from a sand is termed "recoverable gas."

Factors Peculiar to Field Considered

The factors peculiar to any particular gas field are considered when making estimates of reserves as a basis for a project, and an economic pressure to which the reserve is limited is selected. For instance, a field might have an average rock pressure of 700 pounds per square inch at the time a reserve estimate is made. The economic pressure below which this field could not be operated profitably might be 70 pounds per square inch. Thus only 90 per cent of the total volume of gas in the sand can be recovered profitably.

Another factor of importance is the differentiation between recoverable gas and deliverable gas. All of the gas recovered from a producing sand is not delivered to a market. In many cases, the deliverable gas, due to local operating conditions and influences beyond the control of the gas company, is not more than 50 per cent of the recoverable gas. This item should be considered carefully. The presence of an oil-producing sand in the same horizon with the gas-producing sand is one illustration of this condition. The development of the oil field under present practice, limits the volume of deliverable gas to only a small percentage of the recoverable gas. It is poor policy for a gas company to risk a huge investment in pipe line facilities under such conditions.

The natural gas department of the American Gas Association has initiated an important conservation movement in the appointment of a committee to cooperate with the oil producers to effect a saving in the gas lost in the production of oil. Such a saving would be immense and would insure a reserve of gas even in this southwest country to warrant an expansion in pipe line facilities that could hardly be estimated at this time. It is surprising how few strictly gas fields are located in Texas, Oklahoma, and Louisiana. Combination gas and oil fields, however, are numerous.

Casinghead Gas Reserve Estimates

A reliable estimate of gas reserves when the gas is produced with oil is a difficult problem. Gas companies cannot curtail the rate of production to satisfy requirements of their pipe line facilities, but the rate of production is dependent largely upon the rate of production of the oil. As a result, the analysis of the gas reserves is related closely to the reserve study of the oil production. A detailed study of subsurface conditions, the casing program, sand formations, and water encroachment problems has to be made carefully. The operating policies of each company in the field are of importance.

The drilling program outlined by the companies gives a basis for estimating the future rate of production of both oil and gas from the field. As explained previously, there is a difference between the volume of gas that can actually be recovered from the sand and the volume that can be delivered to the consumers. Cognizance has to be taken of the amount of gas that will be used for fuel and drilling purposes, for gasoline plant shrinkage, and for excess gas that will be produced with the oil that cannot be handled by the pipe line facilities of the gas company. All of these factors influence an estimate of the actual producing life of the field.

The estimate of the reserves in a gas-producing area forecasts only the total volume of gas that can be recovered from the sand. Such an estimate of total recoverable gas fails to give a clear and definite picture of the availability of the gas in the later producing life of the field and leaves many engineering problems unsolved. For instance, a gas field might be operating at an average rock pressure of 700 pounds per square inch and be able to deliver into the pipe lines under peak load conditions 50,000,000 feet of gas per 24 hours at a back pressure on the wells of 95 per cent of the rock pressure or 665 pounds per square inch.

Questions That Arise

Some of the questions which naturally arise with reference to this field are: What back pressure will likely have to be maintained on the wells to produce this same peak load after the rock pressure has declined to 500 pounds per square inch? When will compressor facilities have to be furnished and what facilities will be needed? What should be the drilling program for future gas wells to maintain a desired rate of delivery at a high back pressure? What is the economic limit as regards the productive life of the field between the number of wells that should be drilled and the installation of pumping facilities in the later life of the field? What factors influence the producing characteristics of individual wells in their later productive life, and how can these influences be detected and remedied? Axiomatically, if these factors and influences are determined for the individual wells of a field, the solution of the problems of the field may be reached.

The natural gas department of the American Gas Association has an open-flow committee working in co-operation with the Bureau of Mines on the problem of gauging gas-well capacities. So far, the primary objective of this study has been to find methods of gauging gas-well capacities so as to eliminate the necessity of blowing wells wide open into the atmosphere to obtain open-flow readings. The elimination of this feature of gauging will reduce losses of large quantities of gas, protect gas wells from water encroachment due to "coning" when they are opened wide, protect the sand in the well from caving on changing its characteristics, reduce the hazards of fire and wild wells, and reduce the hazards to employes who have to gauge the large gas wells.

It has been found that for dry sand and unconsolidated formations a gauging test can be conducted in the following manner. First, "shut in" the well and obtain a reading of the shut-in pressure at the well head; then, obtain four or five measurements of the rates of flow of gas from the well at each of the four or five corresponding back pressures. These back pressures should be a high percentage of the shut-in pressure. It is not necessary to reduce the back pressure to less than 80 per cent of the shut-in pressure.

After calculating the actual pressure at the sand for each reading, then plot on logarithmic paper the rates of flow as abscissae against the respective differences between the squares of the shut-in pressure at the sand and the back pressures at the sand face. A straight line can be drawn through the plotted points, which show the characteristics of the flow of gas from the producing sand into the well.

Calibration of Capacity

This relation in reality is a calibration of the capacity of the sand immediately surrounding a well to deliver gas into that particular well under any conditions of pressure. The depth of penetration, the size of bore, the method of finishing the well, and the character of the sand influence this calibration. If no changes occur in the well, in the sand, or in the character of the gas this relation should be applicable for the producing life of the well.

It can thus be seen that the question of gauging gas-well capacities is really more than a study of the measurements of "open flow." Data already have been obtained in the operation of wet gas wells, wells subject to water encroachment, and under other operating conditions which suggest the application of these principles to "check up" on certain wells so as to forecast the deviations from what ordinarily would be expected in the operation of dry gas wells. This was illustrated clearly by a gas well which for two years steadily increased in its water production. Quarterly tests on the well showed that the capacity of the well to deliver gas under a definite set of pressure conditions decreased. The following results were noted:

Difference between the squares of the formation and back pressures	Rates of flow M. cu. ft. per 24 hours
100,000	2,400
100,000	2,350
100,000	2,210
100,000	2,150
100,000	2,010
100,000	1,900

Conditions in gas fields vary, of course, and it cannot be expected that the same relation between the rate of flow and the difference of the squares of the formation and back pressures will be strictly applicable at all times in the producing life of a gas well. This is one particular phase of the gas well problem that will be investigated. However, the principle is a basis upon which certain features of a contemplated project can be studied.

Highest Back Pressure Possible

It is desirable to operate a gas field with the highest back pressure on the sand tract that is economically possible. This back pressure on the sand is greater than the inlet pressure to the transmission lines by the amount of pressure due to the weight of the column of gas and the friction drop between the sand and the inlet to the pipe line. The capacity of a section of the pipe line, in turn, is approximately proportional to the inlet pressure, provided that the outlet pressure is less than half the inlet pressure. Therefore, operation of gas wells at high back pressures helps the capacities of the pipe lines under peak-load conditions, especially for long distance markets. There is, however, an economic balance between the amount of drilling that should be done in a gas field to maintain a larger availability of gas at higher pressures, and the installation of pumping facilities to increase the pipe line capacities while actually taking gas from the field at lower back pressures.

The spacing of gas wells is a problem that needs considerable study. There are few fundamental available data on the subject. It is possible to drill too many wells in a gas producing area, which would be detrimental to the producing life of the area. Most recommendations are that wells should not be drilled to drain less than a 40-acre productive tract. The Department of Conservation, State of Louisiana, takes the drainage area of wells into consideration in formulating its permissible withdrawal regulations.

The question of drilling and maintaining high back pressures is closely related to the problem of differentiating between pumped and nonpumped gas. The problem is comparatively simple for a market close to a gas field and a simple transmission system. During the earlier life of the field, pumping would be required. The amount of pumping necessary probably would increase as the field grows older, depending upon the drilling program in the field. After the field is drilled up in accordance with the best recommendations of well spacing and the field continues to grow older, more pumping is required to transmit the gas to the market. In such installations it is possible to obtain a fairly reliable estimate of the amount of gas that has to be pumped in a year.

Problem Becomes More Complicated

This problem becomes much more complicated for some production and transmission systems. A large operating company in order to serve its consumers satisfactorily must maintain a complicated interconnecting system of transmission lines from numerous gas fields with different producing conditions. Some of the markets are located near sources of supply and some far away from any source of supply. The lines are so constructed that the company is "ready to serve" to consumers under any operating conditions. In such an installation, the pumping of the gas is separated into two classes; first, the pumping necessary to put the gas into the inlets of the different sections of the transmission system from the gas fields; and second, the compression of the gas in the transmission system to high pressures after the pressure has decreased due to the flow through the pipe lines.

From the standpoint of production, it

is customary to classify as "pumped gas" only that gas which has to be compressed to higher pressures to put it into the transmission lines from the fields. It is possible to maintain a fairly accurate record of such gas. However, the gas that is compressed in the transmission system is extremely difficult to record. Weather changes are so sudden at times that the demand might double, and it is then necessary not only to change the operating conditions in the fields but to use the compressors on the pipe lines. This might last only for a limited time.

The question of how much gas is actually pumped under such conditions is difficult to answer. In the summer time, when demands on certain sections of the pipe lines are light, compressors on the pipe lines are not necessary and the compressor stations can be by-passed. At the same time, the pressures in certain of the gas fields might be such that pumping at the field would be the best method to provide the necessary pressure at the inlet of the pipe lines, which would eliminate the need of compressors on the main transmission system. This, too, is made possible more easily by so controlling the gas well production that the most economical back pressure is maintained in the field.

Fluctuations Related

The fluctuations in the quantities of gas that are transmitted through a system of pipe lines are, of course, related to the quantities that have to be produced from the gas fields. When more compressors on the pipe lines are working to increase the total quantity of gas flowing through the pipe lines, more gas necessarily is being produced from the gas fields. If no additional gas wells are used to supply this additional gas, the average inlet pressure to the transmission system is decreased.

For practical purposes, the capacities of sections of lines from the gas fields are approximately proportional to the inlet pressures to the lines, provided the discharge pressures on these sections are less than half the inlet pressures. Therefore, if the demand on a transmission system suddenly increases and this additional gas is taken from one field without using any additional gas wells, it is possible for the back pressure on the wells to decrease 20 per cent. This means a decrease of 20 per cent in the capacity of the line from the field which really has to be able to have more gas flow through it.

Either of three methods then is utilized to get the gas to the market; first, using more compressors on the transmission system; second, using more wells in the gas field, thus increasing the back pressure on the field and increasing the inlet pressure to the pipe line, which in turn requires less compression on the pipe line than for the first case; and third, actually increasing the pressure at the inlet of the pipe line by pumping between the fields and the pipe line. There are times, of course, when either one, a combination of two, or all three methods have to be used.

Accounting methods necessarily demand that the pumped gas at the field and the compression of the gas in the pipe line system be considered separately, but those items are closely related as far as operations are concerned. The knowledge of the availability of gas from the different wells in the different fields and the study of these availabilities to satisfy operating conditions can influence the operation of the entire gas system. All of the facilities are essential to maintain the highest ability for "readiness to serve," upon which any gas company prides itself. The results of further studies that have been suggested should even increase this readiness.

Effect of Water

The presence of water in a gas well decreases the ability of that well to deliver gas under normal operating conditions. This condition is not limited primarily to small gas wells, as has been thought, but also affects large gas wells. There has been a good deal of agitation by many of the operating companies on the subject of the provision of some method of keeping water away from large producing wells by using back pressure and never opening the well wide so as to allow the water to come in. There are exceptions, of course, where conditions might be such that the operator would want to clean the well by blowing. The studies that have been made of the use of tubing and other methods of eliminating water trouble are to be commended.

Although in this paper the discussion of availability of gas is based upon actual tests of gas wells in a gas field, it is realized that the conditions of operation are more favorable than will be found in other gas fields. The more rapid encroachment of edgewater, the variations of actual formation pressure in the same field, the changes in the character of the sand, and other variations cause deviations from any forecasts that can be made. However, with such a basis for reasoning and the application of knowledge obtained through experience, more accurate analyses of field conditions are possible.

It has not been possible, with the present progress of the study of gas-well gauging, to give a complete and detailed discussion of gas fields, especially in regard to the availability of gas. The many variations in operating conditions and in the actual fundamental differences in the different fields needs further intensive study. An attempt has been made, however, to bring possibilities that can be considered to the attention of those engaged in the natural-gas industry. The open-flow committee of the natural gas department of the American Gas Association now has a problem which, if broadened and studied carefully and intensively, should give valuable information regarding all phases of natural-gas production.

The fundamentals of actually gauging gas-well capacities not only to determine production under "open-flow" conditions but under any conditions of pressures will apply to such problems as the availability of gas, storage of gas in depleted sands, control of gas wells, estimation of gas reserves, and to many other problems that are important in the natural-gas industry. With these possibilities this committee should obtain very valuable results by a more intensive study of individual gas wells, gas fields and gas-producing areas and then co-ordinating all of these data to form a basis upon which to make general recommendations for general operating conditions.

MAY LEASE MORE INDIAN LANDS

WASHINGTON, D. C., May 5.—There are approximately 104,000 acres of tribal land of the Chickasaw and Choctaw nations along the line of the Red River running to 3 miles below the mouth of the Little River which may be opened for oil prospecting before this session of Congress adjourns. Representative Tom D. McKeown of Ada, Okla., introduced a bill authorizing the Secretary of the Interior to lease these lands for oil and gas purposes. The bill was referred to the Indian office, and approval has been received, accompanied by the statement that the opening of these lands for oil and gas exploitation would add materially to the tribal income. The House Committee on Indian Affairs has now ordered a favorable report and the bill has been placed on the House calendar and present indications are it will be passed.

PRAIRIE SHIPMENTS

The Prairie Pipe Line Co.'s crude oil shipments (deliveries to refiners) in April were 5,575,389.39 bbls., or an average of 185,846 bbls. per day. The company's March shipments averaged 197,244 bbls. per day and February shipments 194,041 bbls. per day.

BARNSDALL GASOLINE LINE

The 800-mile gasoline pipe line which Barnsdall Corp. has had under contemplation to transport gasoline from its refineries at Okmulgee and Barnsdall, Okla. to Milwaukee, Wis., has now been authorized by directors for construction. The program involves an expenditure of $8,000,000.

CALIFORNIA OIL FIELDS OPERATIONS FOR MARCH, 1930

According to figures collected by the American Petroleum Institute, Pacific Coast office, the total production of crude oil in California for March amounted to 19,699,979 bbls., an average of 635,483 bbls. per day. This is a decrease of 110,433 bbls. per day under February production.

Total stocks of crude and all products in Pacific Coast territory decreased during the month 728,345 bbls. The total stocks at the end of the month were 188,970,378 bbls. The total stock increase for 1930, up to March 31, was 4,206,645 bbls.

Seventy-nine wells were completed during the month with an initial daily production of 45,924 bbls., compared with 53 wells completed during February with an initial production of 28,747 bbls.

PRODUCTION

(Figures of production and stocks are in barrels of 42 gallons)

District—	Bbls. per month	Daily average Mar., 1930	Feb., 1930	Mar., 1929
Kern River	477,253	15,395	19,565	15,690
Mount Poso	307,522	9,920	13,510	32
Fruitvale	63,939	2,063	2,779	347
Round Mountain	100,361	3,238	2,949	65
McKittrick	131,865	4,254	4,725	4,879
Midway-Sunset	2,117,942	68,321	75,784	71,330
Elk Hills	547,998	17,677	17,095	18,462
Lost Hills-Belridge	74,834	2,414	5,132	4,473
Coalinga	285,831	9,220	9,580	10,014
Kettleman Hills	398,684	12,861	13,167	3,442
Wheeler Ridge	19,193	619	636	731
Watsonville	1,938	63	63	62
Santa Maria	95,832	3,091	3,418	4,712
Capitan	2,298	74	125	.....
Summerland	12,568	406	345	120
Elwood*	1,209,024	39,001	43,477	25,819
Santa Barbara	.....	.....	4	.....
Rincon	89,795	2,897	3,103	3,508
Ventura Avenue	1,375,453	44,370	55,001	54,114
Ventura-Newhall	155,156	5,005	5,271	5,455
Los Angeles-Salt Lake	47,205	1,523	1,587	1,494
Whittier	43,701	1,410	1,459	1,624
Fullerton (Brea Olinda)	419,997	13,548	13,404	13,408
Coyote	335,805	10,833	11,949	12,186
Santa Fe Springs	4,650,283	150,009	179,209	170,171
Montebello	217,512	7,017	8,603	10,994
Richfield	332,363	10,721	14,610	16,868
Huntington Beach	902,750	29,121	41,001	46,127
Long Beach	3,082,062	99,421	113,813	187,605
Torrance	375,645	12,114	12,354	14,338
Dominguez	282,908	9,126	11,054	10,962
Rosecrans	211,081	6,809	6,809	6,843
Inglewood	551,495	17,790	21,915	25,517
Newport	1,240	40	40	68
Seal Beach	744,180	24,006	31,104	41,778
Potrero	29,501	952	711	722
Lawndale	4,765	154	565	800
Playa Del Rey	.....	.....	.....	.....
Total	19,699,979	635,483	745,916	784,669
February	20,885,660	745,916	.....	.....
Decrease	1,185,681	110,433	.....	.....

*Goleta abandoned. Production from Elwood.

STOCKS

	Mar. 31, 1930	Feb. 28, 1930	March stock decreases	Mar. 31, 1929
Heavy crude, heavier than 20° A.P.I., including all grades fuel	113,123,700	113,687,953	564,253	101,981,165
Refinable crude, 20° A.P.I., and lighter	44,810,122	44,341,155	*468,967	25,172,456
Gasoline	18,373,397	18,755,619	382,222	13,310,923
Naphtha distillates	3,697,674	3,188,949	*508,725	1,970,157
All other stocks	8,965,485	9,725,047	759,562	9,595,257
Total all stocks	188,970,378	189,698,723	728,345	152,029,958

*Increase.

DEVELOPMENT

District—	New rigs up	Active drilling	Completed	Daily initial output	Active Producing	Abd. wells Drillers	Abd. wells Producers
Kern River	3	2	1	400	846	1	0
Mount Poso	1	1	3	382	71	1	0
Fruitvale	2	5	0	...	13	1	0
Round Mountain	2	2	1	250	12	0	0
McKittrick	0	3	1	30	243	0	0
Midway-Sunset	5	18	11	8,387	1,956	4	10
Elk Hills	0	0	0	...	241	0	0
Lost Hills-Belridge	0	3	1	29	166	0	0
Coalinga	0	4	0	...	724	0	1
Kettleman Hills	0	8	0	...	4	1	0
Buttonwillow gas field	0	4	0	...	7	0	0
Wheeler Ridge	0	0	0	...	33	0	0
Watsonville	0	0	0	...	6	0	3
Santa Maria	0	5	0	...	184	0	1
Summerland	0	1	1	25	98	0	0
Capitan	2	1	0	...	2	0	0
Elwood*	2	6	4	12,861	28	0	0
Santa Barbara	0	0	0	...	...	0	1
Rincon	0	2	1	55	33	1	0
Ventura Avenue	4	31	0	...	144	0	0
Ventura-Newhall	7	21	0	...	468	5	0
Los Angeles-Salt Lake	0	0	0	...	309	0	0
Whittier	0	1	0	...	167	0	0
Fullerton	0	1	0	...	368	0	0
Coyote	5	4	0	...	195	1	0
Santa Fe Springs	1	54	34	15,321	417	3	2
Montebello	0	0	0	...	174	0	2
Richfield	1	2	0	...	219	0	1
Huntington Beach	1	4	0	...	431	0	4
Long Beach	10	67	19	8,074	866	3	1
Torrance	0	0	0	...	580	0	1
Dominguez	0	2	0	...	57	0	0
Rosecrans	0	0	0	...	101	0	0
Inglewood	0	0	1	25	216	0	0
Newport	0	0	0	...	4	0	0
Seal Beach	1	2	0	...	132	0	0
Potrero	0	2	1	85	10	1	0
Lawndale	0	1	0	...	8	0	0
Playa Del Rey	8	8	0	...	...	0	0
Miscellaneous drilling	6	143	0	...	...	8	0
March	61	408	79	45,924	9,533	30	27
February	59	482	53	28,747	10,180	20	17
Increase	2	†74	26	17,177	†647	10	10
Average for year 1929	109	610	76	100,625	10,550	26	18
Average for year 1928	107	520	59	56,802	10,823	15	25
Average for year 1927	97	404	75	39,992	11,276	23	21
Average for year 1926	95	422	76	32,635	11,288	24	17
Average for year 1925	105	417	79	42,247	11,393	28	12

*Goleta abandoned. †Decrease.

OBSERVE CALIFORNIA GAS CONSERVATION LAW

(Continued from Page 51)

able. This novel method, practised for years in the Gulf Coast, is being used for the first time in California, and proves to be a very successful move. In running tubing in many flowing wells there has not been a single accident, and in no case any great difficulty.

A new use for gas lift has been found. Injecting gas under high pressure into the casing of a tubed well in many cases has resulted in a great reduction of the formational gas and maintained a fair production of oil. The theory of this process is that the injected gas relieves the formational gas of a great part of the work of lifting the oil to the surface, and allows only sufficient formational gas to come into the well to bring the oil from the formation with it. This gas lift method has been found to function well when the tubing is set quite deep in the well. Of course back pressure must be applied by beaning to control the influx of both oil and gas. High pressure equipment has been required for this method, and a new use has been found for high pressure oil and gas separators. Instead of compressing the gas, necessary to be injected into the well, by means of the ordinary two-stage compressor, high pressure oil and gas separators have been installed, allowing gas at 200 pounds or better to be taken from the separator into high pressure compressor cylinders. By replacing the usual low pressure cylinder on two-stage compressors with a high pressure cylinder, the old compressors have been made to handle a greatly increased volume of gas with very little, if any additional power to do the work. In some cases 2,000,000 to 4,000,000 feet under 500-700 pounds pressure, have been injected into the well casing. This novel use of the high pressure separator, and the revamping of old compressors, have decreased the unit cost of compressor equipment very satisfactorily.

Another Method

Another method, developed by the writer, has also proved itself to be very effective on high pressure gassy wells. Its low initial and operating cost are also very appealing. This method consists of circulating oil in wells that are tubed quite deep. Off-hand the method seems foolish, but it has been found to be of value. The additional oil injected into the casing increases the weight of the column of gas and oil flowing out of the well, thus serving in a manner as a bottom bean. The additional oil also occupies space in the tubing ordinarily occupied by high pressure gas, thus making possible the required velocity of efflux. The ratio of the circulated oil to the oil coming from the formation varies between 40 and 80 per cent. However, the ratio is arrived at only by experimental means. The choice of pump required to do this service has been found to be quite a factor. The use of the large mud hog running at slow speed has been found to be anything but successful, inasmuch as the oil is injected unsteadily and causes the well to head. A smaller pump, more in keeping with the volume required, running at fairly high speeds, has been found to be very much more effective. This method offers no panacea for all ills, and has been found successful only on wells possessing a huge kick and lots of gas.

Bottom Bean

There are on the market at present several bottom beans adjustable from the surface, which undoubtedly would be effective in meeting the situation. In numerous cases the use of small tubing at the bottom of the tubing string has been found to serve in an excellent manner. The restrictions at the bottom cause the pressure to be maintained at the bottom of the tubing, thereby allowing only sufficient gas to flow from the well necessary to lift the influx oil coming from the formation. Very little pressure is required, and in fact, the lower the pressure maintained, the better, as far as gas-oil ratios are considered, where bottom beans are employed or small bottom-end tubings.

The Santa Fe Springs operators have proved that gas conservation is possible, and that when wells are brought in with proper arrangements it is entirely possible to produce oil without wasting great quantities of gas. In fact, after gas conservation was put in effect decline curves of the field and individual wells were very much reduced, proving that the oil can be removed with very much less gas in much greater ultimate quantites.

WILDCAT GASSER IN PENNA.

SOMERSET, Pa., May 3.—A gas well, which the owners estimated would supply several towns of 5,000 population with gas, has been brought in on the O. S. Miller farm, 5 miles north of here, by Dr. W. R. Dougan, Somerset dentist, and Pittsburgh associates.

The gas was found at a depth of 3,000 feet. It was the third well Dr. Dougan and his partners had drilled within recent weeks. The other two made only a small showing of gas.

The well is the first in 25 years in this district to give forth a large quantity of gas.

G. W. MENNIS KILLED

FORT WORTH, Tex., May 3.—G. W. Mennis, independent oil operator of Fort Worth, Tex., was killed in a plane accident while making a return trip from Oklahoma City, Okla., to Fort Worth.

COLON PRODUCTION

Colon Oil Corp.'s subsidiary in Venezuela reports well No. T-58 brought in producing 80 bbls. per day through eleven-sixteenth inch flow plug, casing pressure 40 pounds. Production for the week ended April 25 was 108,670 bbls.

J. E. B. GIBBONS NOW WITH S. R. DRESSER

J. E. B. Gibbons

J. E. B. Gibbons, well known in the oil and gas business, has become associated with S. R. Dresser Manufacturing Co. of Bradford, Pa., as special representative. His new work will take Mr. Gibbons to practically all oil and gas fields of the country.

Mr. Gibbons, who for the past five years has been actively engaged in the sale of pipe couplings in the oil and gas industry, was born in Boston and attended school and universities in both Boston and New York. Immediately after leaving college, he became sales engineer in the power specialties department of Johns-Manville, Inc., remaining with that firm for 10 years.

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All sizes in casing and line pipe from 2" to 15½" inclusive.
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FOR SALE—8 Sweetland Filter Presses, No. 12, No. 10, No. 9, No. 7, No. 2; 1—300 H. P. Scotch Marine Boiler; Miscellaneous—Compressors, Storage Tanks, Pumps. CONSOLIDATED PRODUCTS COMPANY, 17-20 PARK ROW, NEW YORK CITY. BARCLAY 0600.

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Bargains in used and rebuilt lathes, shapers, drill presses, pipe machines, milling machines. Five hundred machines in stock. Terms to responsible parties. Write for catalog.
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26 West Second St., Cincinnati, Ohio.

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1 NEARLY NEW PARKERSBURG STANDARD drilling rig, steel derrick and tools. H. C. Nelson, 216 Rosen Block, Muskegon, Mich.

A NEW SEISMOGRAPH—Simplicity, sensitivity, variable magnification and period are outstanding features of this new instrument. If interested in geophysical prospecting, it may pay you to investigate. For particulars, write Box 165, Beaumont, Tex.

FOR SALE—Used surveying instruments, transits, levels and alidades at prices that will move them. W. E. Bernhard, Wichita Falls, Tex.

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ROYALTIES—PRODUCTION

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The OIL and GAS JOURNAL
PRODUCING REFINING ENGINEERING MARKETING
Classified Wants Section

Heavy Week End Demand in Chicago

Highways Congested With Cars Due to Favorable Weather. Jobbers Expected to Be in Market as Result

By J. B. Waldo

CHICAGO, May 5.—While the gasoline demand was scattered and some spot sellers did more than others, on the whole there was an improvement over last Monday. Some had quite a number of orders late Saturday and those, like the orders received today, reflected an expected demand over the week end. It usually takes until Tuesday for the jobber with more than a couple of stations to know what his gallonage has been over the week end. The week end weather was ideal for motoring and the highways were congested by the number of cars which some estimated as the largest on a single day. A long day was made of it and early reports indicate that the gasoline consumption was very heavy in and around Chicago. Jobbers, if they do not order, will have to draw on their stocks. Contracts are being lived up to the 100 per cent line. The trade is hopeful the weather will continue long enough to make such inroads into stocks that buying will be necessary. There was little change in prices for U. S. Motor as the large refiners were steadily quoting 7½ cents but other sellers quoted as low as 7⅛ cents. Although there was a general attempt to sell at not less than 7¼ cents but this was not always obtainable. The demand for the higher gravities was light and some 60-62 400 endpoint was offered at the same quotations as U. S. Motor with 7¼ cents a common quotation. The higher gravities were more firmly held.

Kerosene was very quiet and prices were unchanged but easy in tone. Nothing was doing in furnace oils. The inquiries or orders completed for heavy industrial fuel oils were for small quantities and prices showed further ease. The warmer weather is permitting the sale of the higher cold test oils practically adding to the supply. One refinery has quite a stock, several hundred cars at least, of a 22-24 clean oil with a low sulphur and viscosity but a cold test around 30° which it is offering at 55 cents.

Marked Time During Week

During the past week the gasoline market here marked time to a great extent but barely held its own in the face of free offerings of the remainders of April purchases which were really in the distress class. A large part of this consisted of gasoline commonly termed "Navy" and conforming in part to "Navy" specifications but not to the full intermediates much of which was bought for April delivery at around 6½ cents. Lack of active demand resulted in a less strong market than was expected and the jobbers during most of the month were able to buy full specification gasoline at little more than the price asked for this material. The latter was left unsold and at the close of the month it was freely offered at 6½ cents and between brokers at 6¼ cents. There was also some gasoline of better quality from other sources which had to be moved, the result being that at the close of the month spot gasoline was selling at around 7 cents for full grade material. So far as local stocks or cars on the tracks are concerned, the situation is really quite clean but refiners still are asking for shipping instructions so that all of the April material has not been accounted for.

The May market has been to some extent influenced by the situation and sales have been made over the month at prices which should pay someone a good profit if the expected price increases take place. The following mentions of offers or of sales made are all for good Oklahoma U. S. Motor gasoline or its full equivalent, the price based on Group 3 deliveries. One offer was made which seems a very fair one. It was of 7 cents over May plus one-fourth of any advance in the tank wagon price. There were several offers of 7¼ cents over the entire month of May and some sales were closed at these prices. A more general range of quotations was 7¼ cents immediate, 7¼ over the first half of May and 7½ over the month, but this quotation became less common as the single price of 7¼ cents over May was more generally known. Some of these quotations came from refiners of the medium or smaller class while others were from brokers and in the latter event the gasoline would be subject to a charge of $5 a car to the broker. The ability of these brokers to go through with their agreement to furnish gasoline at such low prices is seldom questioned. A contract to supply several hundred cars over the month at 7¼ cents might entail a severe loss and the assumption is that the broker is in reality acting for some refiner who for some reason does not wish to appear in the transaction. The trade here is of the belief that some of this gasoline comes from large concerns who need relief but do not care to have it known. No jobber was overly anxious to buy as most of them have good stocks which they are carrying in expectation of profit by so doing, possibly a double profit if there is a tank wagon advance.

Contract Shipments

The major refiners admit that they are out of the spot market but find consolation in the good account that their contract customers are rendering of themselves. Shipping instructions are coming in very well and the only grief is that there are not more contract customers to be had and that it is so difficult at times to retain those the refiners have. The buying up of good jobbing concerns is still going on and it is seldom the jobber is purchased by the refiner with whom that jobber has a contract. Quite often the first intimation the jobber gives of his sale is a notice to his refiner asking that the contract be cancelled. We are now approaching the time when there are a good many contracts to be renewed and there is a bitter struggle over many of these contracts. It seems to be understood that the A.P.I. committee which interprets the Code has ruled that a refiner may solicit a contract to be made at the expiration of the present contract. If no such ruling has been made the salesmen are calling on every desirable account in their territory and keeping in touch with all buyers for the purpose of securing an opportunity to make an offer at the proper time. When the time comes, the holder of the contract for the expiring term should have a decided edge, as the buyer knows all about the product, business methods and the like of the other party to the contract. There is seldom any great difference in the contracts offered or the quality of the material so that much depends on how thoroughly the refiner has cared for the interests of his customer. In other lines of industry, there is a great deal of mutual esteem and of confidence between the buyer and the seller. It is no uncommon thing for the buyer to purchase a considerable part of the merchandise that he carries from the same concern year after year. There is bound to be more and more of this in the petroleum industry as the industry increases its knowledge of how to do business successfully.

Kerosene Slow

There is still a sale for kerosene but it is slow and lacks animation. Not much buying ahead but some demand for cars in transit as the kerosene is wanted now if at all. The severe storm of last Thursday and Thursday night is very likely to hold up the completion of the spring farm work in the Northwest a little but it does not mean that any larger quantity of tractor fuel will be consumed. Some refiners state they have ceased to refine kerosene and will reduce their stocks to low levels but the larger companies will have to have some kerosene. The trade became aware that prime white distillate with suitable specifications would make an excellent tractor fuel and just about the time the demand for tractor fuel began the demand for distillates dropped to a point where refiners were glad to find a market. Kerosene might have advanced to a much higher figure this season were it not for the fact that prime white distillate was taking its place at not over 3¼ cents and much of it at 3 cents so there was quite a saving for the jobber and the refiner was able to move distillate which he might have had to dispose of less easily, probably by re-running.

Burner Fuel.

Occasional orders come straggling in for zero gas oil or for domestic burner fuel oil, even for distillate but they are due to some local condition, as the season is over and some work is being done on next season's business. Distributors in many localities find it is good practice to renew their contracts at once even before they have ceased to deliver furnace oil to the householder. If their relations during the season have been mutually agreeable, little trouble is experienced at that time in securing a contract. In some of the larger places the service man who has been the one to come to the rescue of the home owner when his burner was not acting as it should is the one delegated to make the renewal. Often the driver of the delivery truck can secure the business. The average distributor wants, of course, to know what the cost of the material will be which he is to sell and there has been considerable inquiry for contracts.

The contracts offered at present, and this includes one of the largest sources of supply in the district, are all based on some published price usually the average of a daily report with a maximum and minimum price. Some do not contain either. Some have a maximum but no minimum. It is believed this method will result in more uniformity of quotations and somewhat higher prices. Of course these contract quotations bear no relation to the present spot markets for furnace oils of all kinds.

Zero gas oil is quite freely offered users at 2½ cents Group 3, and straightrun gas oil at 2⅜ cents and by some sellers at 2¼ cents, these prices to the consumer, usually direct from the refiner. The usual price for a prime white distillate is 3 cents and for the other kind is 2¾ cents. The damand for all these is light.

The business in the heavy industrial fuel oils is not sufficient to take the offerings in this market and there is some underselling of one refiner by another. As is usually the case in such instances the smaller refiners are getting the bulk of the trade because they want it badly enough to make a price below the quotations of the major refiners here. Dealers can buy 18-22 fuel oil for resale in this market as low as 55 cents a barrel. Of course the price is for Chicago delivery and the territory in which it can be shipped to advantage is limited but it does give users of fuel oil within the Chicago switching district an advantage, at times a decided advantage, in the cost of their fuel. Aside from the business doing on contracts, there is little activity noted for the present in the spot market which is characterized by very careful buying and as yet no general inclination is shown to purchase for future wants. Some offerings are now being made of the heavy residual oils from the cracking stills and inducements are being offered for the user to equip himself to burn it. The assurance is frequently given that it will not be long until that cracked residual oil will be the only grade available in quantities.

Gas Company Contracts

Several contracts have been figured on with gas companies for straightrun gas oil but so far as known none of those in view have been closed and in some cases the purchasing agents have withdrawn for the time being. Possibly the recent weakening in the market for straightrun gas oil has decided them to wait. Quotations were received in this market last week of 2⅛ cents for what was according to specifications a decidedly attractive grade of gas oil. The Sinclair Refining Co. has given no indication of its intention to re-enter the market for industrial oils in a regular way. It may have some from time to time. The Shell Petroleum Corp. is prepared to deliver a certain amount of fuel oil to contracting concerns and will sell to tank car sellers if the refinery has the oil. The Globe Oil & Refining Co. of Illinois has been a steady source of supply for local deliveries and the parent organization in Oklahoma has been a general source. There are some of the other Oklahoma, North Texas and Kansas refineries who at times have some oil to sell but the number of those that can be depended upon to fill an order in the height of the season is a different matter from today when supply is in excess of the demand. Natural gas is cutting into the use of fuel oil. So far this market is free but in a year from now the gas companies will be a potent factor in the fuel oil situation.

There has been no change in the tank wagon outlook. The list remains the same but this is regarded as temporary. At present jobbers are carrying full stocks to take advantage of the possible tank wagon advance. When this is made, if it is made as most expect, there will be less probability of further tank wagon advances and the jobber will have that much less incentive to purchase beyond his immediate needs. It will then be possible for the refiner to establish a price which will be mutually profitable and satisfactory to large and small operators alike either jobber, refiner or both.

JERSEY COMPANY IN NORWAY

The expansion of the marketing operations of the Standard Oil Co. of New Jersey in Norway is indicated by recent capital increases on the part of a number of subsidiaries of the New Jersey company in that country. The Norsk-Amerikansk Petroleum Co. A/S is increasing its capital from 500,000 crowns to 625,000 crowns; Vallo Oljeraffineri is increasing its capital from 2,500,000 crowns to 3,750,000 crowns; A/S Vestlandske Petroleum Co.'s capital is also being increased from 5,100,000 crowns to 6,936,000 crowns, and A/S Oesterlandske Petroleum Co. from 4,800,000 crowns to 6,000,000 crowns. These increases in capital have all been made to enlarge plant capacities and to provide additional working capital.

THOMAS MISKELL DIES

Mr. and Mrs. P. M. Miskell of Tulsa were called to Kane, Pa., by the death of Thomas Miskell, father of Mr. Miskell.

General Advances in Eastern Market

Refining Situation Firming Up in Sympathy. Favorable Weather Stimulates Consumption. Balance of Market Steady

By A. E. Mockler
New York Bureau, The Oil and Gas Journal, Rooms 1919-21, No. 154 Nassau Street

NEW YORK, May 5.—General advance in tank wagon and service station gasoline prices featured the Eastern Seaboard market during the past week, with the refinery situation firming up further in sympathy. The posted price for U. S. Motor is still retained at 8¼ cents, refinery, by the principal seller and its subsidiary, but all other marketers are a half to 1½ cents over this figure, and a general market of 9 cents is looked for imminently. Favorable weather conditions have materially stimulated consumption.

In the remainder of the market conditions show little change, save that in lubricating oils some demand for bright stocks has made its appearance, with consequent firming up in the price basis.

Further improvement in the statistical position of the motor fuel market has developed. The A.P.I. report for the week ended April 26 showed a decline of 265,000 bbls. in gasoline holdings of all refiners, the total stocks aggregating 52,212,000 bbls., as contrasted with holdings of 53,477,000 bbls. at the close of the previous week. Gasoline stocks held by East Coast refiners as of April 26 were 9,243,000 bbls., a decline of 41,000 bbls. from the holdings at the close of the previous week.

There has been a wide disparity in posted prices on U. S. Motor at East Coast refineries during recent weeks, the range from the lowest to the highest having shown a spread of as much as 1½ cents at times. There has evidently existed a wide difference of opinion among oil company executives in this area as to the advisability of pushing gasoline prices ahead too rapidly.

The improved feeling with respect to refined products, carrying out the more stable basis in the crude production end of the buisness, is reflected in the current position of petroleum securities. Prices for stock of many of the prominent companies in the industry is hovering around the highs for the current year, with the market replete with "bullish" sentiment, all of which indicates a decidedly constructive outlook for the industry as a whole during the current and the third quarter of 1930.

Recent price advances on bunker fuel are being well maintained and the market tone on this oil is more favorable than for a year or more past. The fact that refiners were able to mark up their prices 10 cents per barrel in the face of growing competition from South American fuel oil is taken as a decidedly favorable indication of the improved sentiment which has developed in responsible quarters of the oil trade since the start of the year.

Tank Car Gasoline

Standard of New Jersey and Beacon Oil alone among the refinery sellers in this area are still offering U. S. Motor at 8½ cents in tank car lots, quotations of other sellers ranging from 9 cents to 10 cents. While official confirmation is lacking, it is considered possible that the two low sellers will be up to the 9 cents basis by the time this report appears.

Favorable weather conditions have made for sharply increased sales of gasoline this week, and tank car movement with a number of refiners was the heaviest of the season. Jobbers were in the market for prompt shipment gasoline in a large way, and were showing a tendency to keep their storage filled at the inside prices now prevailing. Sellers, however, were unwilling to book far ahead on the basis of going prices, although considerable inquiry was heard for deferred deliveries.

Refiners report a steadily growing call for premium gasoline, and this class of motor fuel is slowly but surely supplanting U. S. Motor as the leader in gallonage. In former years, the premium grades had their greatest vogue in cold weather, but the more modern types of automobile motors call for a high-compression fuel and results of the higher priced fuels have been such as to justify their year-'round use by motorists.

With a number of the leading refiners in this area adhering to their voluntary one-seventh curtailment program, notwithstanding the failure of the rank and file of the industry to adopt this plan, gasoline stocks in the East are slowly declining, and with refiners drawing on storage for part of their current requirements, it is expected that supply and demand will reach a satisfactory balance during the current year.

Tank Wagon Gasoline

A general advance in both tank wagon and service station prices throughout the Eastern area featured the week, the increases extending all the way up and down the seaboard. The average advance was 1 cent on both tank wagon and service station schedules, although in a few instances the mark-up was 2 cents in areas which had been below the general parity.

Fair weather for motoring has brought about a substantial gain in tank wagon sales, and with favorable weather, marketers in this area look for record consumption this season, notably on the premium fuels, sales of which are gaining steadily.

A feature of the current advance in New York and New England was the fact that Tide Water, for the first time, took the initiative in the advance, with Standard of New York following in the van. Likewise in the western New York area, where the increase was 2 cents, Richfield took the leadership in posting the higher schedules. With the larger number of companies marketing in this area it is possible now for any of the large companies to take the first step in an advance with confidence that they will be followed by a reasonable number of other marketers. In other years, with only three or four major units in the area, a company which took the first step in making a tank wagon advance occassionally found itself "out on a limb" through the refusal of the other companies to follow in this action.

Kerosene

Activity in the tank car market continues rather restricted, with jobbers operating in but hand-to-mouth volume. Although the posted quotation is unchanged at 7¾ cents, it is still largely a buyers' market and water white is freely available down to 7¼ cents in tank car lots.

Warmer weather has retarded the sale of kerosene at retail outlets and tank wagon movement has shown a corresponding decline. Marketers believe this is but a temporary situation, and look for a good spring business before the start of the usual summer marketing period in the summer resort sections of the East, where "coal oil" is till largely used for cooking and lighting in resort sections.

Bunker Oil

Marine sales of bunker "C" are holding up well and the market is firm at $1.15 per barrel, in bulk, f.o.b. New York and New Jersey refinery terminals. Consumption has not been affected by the recent advance in price, and Eastern markets are well maintained, notwithstanding the steady import movement and occasional shipments from the Pacific Coast.

Domestic consumption is showing a seasonal easing-off, but this drop in sales is not important, when considered against the aggregate volume for the area.

Sales of furnace oil for industrial heating are also on the decline, although a good year-round volume has developed on this oil, due to the general use of fuel oil for servicing large office and apartment buildings.

Diesel Oil

Sales are showing a satisfactory gain, and current indications are that the second quarter's business will run ahead of that for the March quarter, and will show substantial improvement over the second quarter last year. Refiners continue to hold the market at $2 per barrel, bulk at terminals, with a little business going through at 10 cents per barrel over this level.

A number of engine companies have Diesel development programs under way, and the use of these engines in domestic fields, such as railroad, construction, and other industries, is picking up steadily, indicating a constantly widening domestic market for Diesel oil. Diesel motors for aircraft, however, are conceded to be some distance away yet so far as becoming a quantity proposition is concerned.

Gas Oil

The advent of daylight saving in this area has made for a sharply curtailed demand for gas oil from gas manufacturing companies in the metropolitan area. Refiners continue to quote recycled 28 plus gas oil at 5¼ cents, but oil is available freely at a quarter to a half cent under this figure.

Straightrun gas oil is now coming on the market, refiners utilizing whatever production of this oil they have as cracking stock.

Paraffin Wax

Sluggish demand continues to keep the market in easy position, and prices remain unchanged at recently revised levels. Buyers who made ineffectual attempts to book six months ahead during the middle of April, without finding refiners willing to contract at current going prices, have apparently withdrawn from the market in an effort to force prices lower and refiners into a trading mood.

Hand-to-mouth buying has been very pronounced throughout the week on the part of the domestic trade, and export operations are apparently becoming infected with the same market views. Stocks of paraffin wax are topheavy in some refining areas, and buyers believe it is only a matter of time before refiners are willing to meet their price ideas on later deliveries.

Lubs

Aside from a firming up in the position of bright stocks in the field, the lubricating oil market is without material change. Compounders were in the market for bright stocks in better volume, and the market is firm at 48 cents for light and 46 cents for the dark. On 600 steam refined, there has been a little more inquiry, and more interest is also shown in offerings of Warren and Oil City 600 "E," but the volume of actual trading has as yet shown little gain.

Domestic consumers are believed to be carrying unusually small stocks for this season, and sellers are looking for an early improvement in trading.

Export inquiry is a little better, but buyers are still cautious when it comes to actual business. With the market in the field showing a steadier undertone it is believed export sales will pick up shortly.

Red and pale oils were moving into consumption at a satisfactory rate, and refiners reported a fair movement of tank car shipments. Prices remain steady and unchanged on all grades.

Gulf Coast Market

Comparative quiet prevailed in export markets at the Gulf. An inquiry for a cargo of gasoline was reported for shipment to the French subsidiary of a leading American company, but it was believed the parent organization would take care of this business. Operators at the Gulf are anticipating a heavy buying movement by France and England, but this business is slow to develop.

Venezuelan crude is strong, in sympathy with the recent advance in bunker oil at East Coast ports. Two cargoes were reported closed a short time ago at 85 cents per barrel, but the market is now firm at around 90 cents. A buyer who came into the market this week for two cargoes for July shipment was unable to better $1 per barrel on this business. There is very little Venezuelan crude available in the spot market.

Kerosene business at the Gulf continues confined to small lots, with less cargo business, the only trading reported for the past fortnight. The market is fairly steady. In East Coast markets, refiners report an active inquiry for cased kerosene, but the bulk market is sluggish.

Export operators were interested in a press report from Spain indicating the Government is contemplating the abolition of the Petroleum Monopoly, which came into being in 1927. At the present time two or three American companies and the Soviet Naphtha Syndicate control practically all of the Spanish business, through contracts with the Monopoly, but elimination of that organization would again throw the market in Spain open to all comers.

Petroleum Exports

Routine export movement of refined products was reported from New York during the week ended April 26. Aside from lubricating oil, which showed a sharp increase over the totals of recent weeks, export shipments of other refined products were generally smaller.

While inquiry for refined products continues fair, actual business has as yet shown little increase. Prospects of a higher market during the summer months, however, is expected to stimulate sales during the current month.

The following table shows principal exports of refined petroleum products from New York for the past three weeks (all figures in gallons unless otherwise noted):

	Week ended		
	Apr. 26	Apr. 19	Apr. 12
Gasoline	505,000	211,000	355,000
Naphtha	3,000	260,000	1,965,000
Kerosene	1,200,000	153,000	220,000
Fuel oil	257,000	27,000	55,000
Lubricating oil	1,836,000	1,530,000	1,416,000
Petroleum, refined	210,000	973,000	1,425,000
	Pounds		
Petrolatum		66,000	14,000
Paraffin wax	1,686,000	888,000	1,920,000
Refined	4,000	10,000	74,000
Scale	143,000	180,000	1,350,000
Lubricating grease	700,000	1,022,000	1,250,000

There were two exceptionally large lub oil export shipments during the week, 1,350,000 gallons going out on the Lackawanna for Manchester and 840,000 gallons on the Hanseat for Bremen or Mamburg.

Imports

Imports of crude and refined oils at the principal United States ports for the week ended April 26 totaled 1,908,000

bbls., a daily average of 272,571 bbls., compared with 1,791,000 bbls., a daily average of 255,857 bbls. for the previous week and a daily average of 262,143 bbls. for the four weeks ended April 26. Details follow:

(Barrels of 42 Gallons)

At Atlantic Coast Ports—	
Baltimore	433,000
Boston	203,000
New York	826,000
Philadelphia	359,000
Others	32,000
Total	1,853,000
Daily average	264,714
At Gulf Coast Ports—	
Tampa	55,000
Total	55,000
Daily average	7,857
At all United States Ports—	
Total	1,908,000
Daily average	272,571
Daily average four weeks	262,143

Distribution of total imports is as follows:

Crude	1,402,000
Gasoline	193,000
Fuel oil	385,000

South American fuel oil is reaching Atlantic Coast ports in moderate quantities, and is moving into consumption in regular trade channels without disturbance to the market situation. Gasoline from South American channels is also moving out regularly at prices in line with the domestic product, it is reported.

California Oil Receipts

Receipts of California crude and refined oils at Atlantic and Gulf Coast ports for the week ended April 26 totaled 442,000 bbls., a daily average of 63,143 bbls., compared with 195,000 bbls., a daily average of 27,857 bbls. for the previous week and a daily average of 44,071 bbls. for the four weeks ended April 26. Details follow:

(Barrels of 42 Gallons)

At Atlantic Coast Ports—	
Baltimore	155,000
New York	95,000
Philadelphia	192,000
Total	442,000
Daily average	63,143
At Gulf Coast Ports—	
All ports	none
At Atlantic and Gulf Coast Ports—	
Total	442,000
Daily average	63,143
Daily average four weeks	44,071

Distribution of total California oil receipts is as follows:

Gasoline	393,000
Gas oil	20,000
Lubricants	29,000

ROCKY MOUNTAIN AREA

(Continued from Page 82)

SW. Section 15-17-30, is an abandoned location after having spudded to 40 feet last January. Rig has been moved to NE NW NW, Section 23-17-30, for No. 2-X Parke.

McKinley County

J. W. Halsell and others' No. 1 Santa Fe, SW SW, Section 17-18-9w, Seven Lakes district, is bottomed at 3,250 feet and underreaming the $5\frac{3}{16}$-inch to make a water shut-off.

San Juan County

The San Juan Leasehold Co.'s No. 3 Bowman, NW NE, Section 30-30-15, Meadows district, is drilling at 2,600 feet and had a show of oil and gas at 2,540 feet.

UTAH

The Utah Southern Oil Co.'s No. 1 State, SW SE, Section 26-21-23, Cisco district, San Juan County, Utah, set the 10-inch in sandy shale at 1,651 feet and is testing formation shut-off. The Midwest Refining Co.'s No. 31 Pary, SW SE, Section 14-39-1w, Kane County, is bottomed at 3,560 feet in gray lime and reaming to lower the 10¾-inch. It had a show of oil at 3,370 feet in the Moenkopi.

COLORADO

At a special election held at Craig, Moffat County, Colorado, Arnold A. Odlum, a Denver attorney, was granted a franchise to supply that town with natural gas. The franchise is to run for 25 years, and must be accepted or rejected by the grantee within nine months under a $2,000 bond which has been posted. Construction must start by May 1, 1931. Negotiations for a supply of natural gas are now pending.

There were no completions reported in Colorado nor were any new locations announced. Several wildcats idle during the winter are resuming and several of the more important deep tests are approaching the final stages.

Arapahoe County

The McDeb Drilling Co.'s No. 1 Fitzsimmons, NE, Section 7-4s-66, is drilling at 5,439 feet and carrying the 6¼-inch at 5,408 feet.

Bent County

The Continental Oil Co.'s No. 1 Pipe Springs, NE cor. SE, Section 27-27-49, the deepest hole so far drilled in southeastern Colorado, was reported early this week to have encountered a granite wash at 5,920 feet. A later report was that at 5,980 feet it was still in the wash and that signs were so favorable it had been decided to install a control head. It is understood the formations for the past few hundred feet have been checking favorably with those in the Panhandle district in Texas where the pay is found just below the granite wash.

Huerfano County

The Parker Club, Inc.'s No. 1 Fee, Section 4-28-68, Badito-Alamo Dome, is to be made into a Pennsylvanian test. It is bottomed at 4,115 feet in the top of the Lakota sand where it had a small show of oil after encountering water in the Dakota. The 6¼-inch, which parted at this depth, has been pulled and will be rerun.

Morgan County

The Indian Territory Illuminating Oil Co.'s No. 1 State, C NE NE, Section 16-1n-57, is resuming at 75 feet after spudding and shutting down to complete rigging and to case off surface water.

Weld County

The Platte Valley Petroleum Co.'s No. 1 Patterson, SW SW, Section 24-6n-61, Greasewood Dome, is drilling below 5,600 feet and continues to make some gas. The Dakota, which was expected at 5,200 to 5,300 feet, has not yet been picked up.

Larimer County

The Standard Oil Co. of Colorado's No. 1 Hertha, NW cor., Section 21-4n-69, Berthoud Dome, is bottomed at 2,830 feet in the Nio-Benton with the 8¼-inch cemented at 2,810 feet. Lost tools have been recovered. After drilling out the cement plug the well gauged 1,500,000 feet of gas in 24 hours. This is a larger flow than was encountered in the same horizon in the offset to the north. The next objective is the Muddy which produced 25 bbls. a day by heads in the offset. The Continental Oil Co.'s No. 5 Scott, NE NW, Section 6-9n-68, Wellington Dome, is drilling at 4,230 feet and cleaning out. It is close to the objective, Muddy sand.

Jackson County

The Producers & Refiners Corp.'s No. 1 Hendershot, SE NE, Section 2-6n-81, Pole Mountain, is bottomed in the Carlisle at 3,610 feet and is straightreaming for the 8¼-inch at 3,410 feet.

Rio Blanco County

The White Eagle Oil & Refining Co.'s No. 1-A Fordham, NW SW, Section 9-2s-96, Piceance Creek, is drilling at 3,750 feet in brown shale and carrying the 6¼-inch. The hole continues to make gas. The Texas Production Co.'s No. 1 Potter, NE SW, Section 30-2n-96, White River, is bottomed at 5,984 feet and reported to be making considerable gas, though no test has been possible. The drill stem was twisted off three weeks ago. The fishing tools had hold of it when the fishing string parted 900 feet down from the top.

Mesa County

The Argo Oil Co.'s No. 1 Hoel, NE cor., Section 23-8s-104, High Line Dome, is bottomed at 3,000 feet and had underreamed the 6¼-inch at 2,965 feet when the string parted and dropped 35 feet. Fishing is in progress.

Delta County

The Crawford Oil & Gas Producing Co.'s No. 1 McKissen, SW cor. NE, Section 28-15-91, which was shut down for the winter at 970 feet, has resumed and is drilling at 1,000 feet. It is bottomed in the lower Dakota and will be continued on down to the Pennsylvanian.

Moffat County

The Midwest Refining Co.'s No. 19-SD Parkinson, SW NE, Section 22-4n-92, Iles Dome, is drilling at 3,080 feet and making 110 bbls. of water per hour from the Dakota at 2,977-3,030 feet. The water will be shut off with the 10¾-inch. Same company's No. 24 Hannewalt, SE SE, Section 4-6n-92, Bell Rock, is bottomed at 2,488 feet and lowering the 10¾-inch, which is at 2,398 feet, to shut off water standing within 350 feet of the top. S. H. Keoughan and others' No. 1 State, SW SW, Section 16-4n-101, Midland Ridge, is ready to spud in a test of the Pennsylvanian and Madison. The Texas Production Co.'s No. 1 Berlin, SW NE, Section 19-12n-100, Bartram Dome, is bottomed at 2,507 feet and underreaming the 6¼-inch at 2,335 feet. Mountain Fuel Supply Co.'s No. 1 Lasher, NE NE, Section 25-12n-101, is fishing at a total depth of 2,740 feet.

La Plata County

The Detroit Oil Association's No. 1 Olbert, NW SW, Section 9-35-12, Thompson Park, is resuming at 2,390 feet after being down for several weeks.

Archuleta County

The Standard Oil Co. of Colorado's No. 1 Fitzhugh, NW SW, Section 34-33n-1e, Chromo Dome, which has been delayed in spudding, is moving in casing and equipment and preparing to go ahead.

WYOMING

Big Horn County

The Garland and Byron Domes in Big Horn County, structures adjoining each other and which are among the largest in the Big Horn Basin, are both showing an increase in drilling activity. The Ohio Oil Co.'s No. 1 Union Gas, NE cor., Section 22-56-97, on the Byron Dome, is reported to have shown 100 feet of saturated sand in the Embar formation in cores taken below 5,286 feet and preparations are being made to drill in. The 6⅝-inch casing has been cemented at 5,286 feet and the plug will be drilled out the coming week. The Ohio company is going back into its No. 1 Easton, NW, Section 33-56-97, and deepen it to the Embar-Tensleep series and probably to the Madison lime. This well was completed last year as a gas well with an open flow of 6,500,000 feet a day from the Frontier at 2,590-2,616 feet. Rotary rig with electric drive was used in drilling the well.

It is near the same company's No. 2 Gross Gas, which was completed in the Embar at 3,163 feet in 1926 with an open flow of 40,000,000 feet of gas. The gas, however, was heavily impregnated with sulphurated hydrogen and was unfit for domestic use without treating. In 1928, the company went back into No. 2 Cross Gas with a rotary and deepened it to 3,440 feet where it had more of the bad gas. It was then plugged back to 3,265 feet. Wells on the nearby Garland Dome that had the bad gas in the Embar found a better grade in the Tensleep and it is understood that in the Easton well the Ohio company will cement casing between the Embar and Tensleep for the purpose of separating the gas in the two horizons. The Producers & Refiners Corp.'s No. 3 Government, SW NW NW, Section 24-56-98, Garland Dome, joint with the Kinney-Coastal Oil Co., which was shut down for the winter at 4,234 feet in the Tensleep, is resuming at that depth and is killing a flow of several million feet of gas per day to drill deeper. It is reported that this well, also, will be carried down to the Madison lime. The discovery of oil in the Madison lime on the Frannie Dome in Park County last year is considered responsible for the decisions to deepen these wells to that horizon.

Salt Creek

The Midwest Refining Co.'s No. 29-DT, NW, Section 35-40-79, is standing with the 8⅝-inch cemented at 4,320 feet on top of the Madison lime.

Park County

The Midwest Refining Co.'s No. 31 Rosenberg, SW cor. SE, Section 24-58-98, Frannie Dome, is drilling at 1,295 feet in black shale with the 13-inch at 1,203 feet. This company's No. 31 Frannie Oil, SW cor. NE, Section 25-58-98, has sidetracked bit and has made some new hole. It is bottomed at 1,660 feet and underreaming the 10¾-inch at 1,641 feet. The California Exploration Co.'s No. 2, NW NE, Section 14-48-102, Pitchfork Dome, is drilling at 2,141 feet with the 8¼-inch at 2,097 feet. The Cody Petroleum Co.'s No. 1 Polecat, SW cor., Section 22-57-98, Polecat Dome, is reported making 7,000,000 feet of gas below 2,700 feet. The Resolute Oil Co.'s No. 1, SW NE, Section 17-57-101, Badger Basin, is drilling at 4,607 feet.

Hot Springs County

The Midwest Refining Co.'s No. 8 Weeks, NW SE, Section 6-44-98, Wagonhound, is bottomed at 1,540 feet and cleaning out. The 12½-inch is at 1,435 feet. The Gebo Consolidated Oil Co.'s No. 1, SW cor., Section 23-44-95, Gebo Dome, is resuming after the winter shutdown. The 16-inch is on bottom at 1,335 feet. It had a show of oil at this depth. The Ohio Oil Co.'s No. 1 Smith, SE NE, Section 9-46-99, Walker Dome, is drilling in a wet hole at 4,393 feet. It had a hole full of water at 4,340 feet, probably in one of the Dakota sands.

Niobrara County

The Ohio Oil Co. is resuming in its No. 1 Converse Sheep, SW SE, Section 32-36-65, Lance Creek Field. This is an old well being deepened to test the Sundance and probably the Embar and Tensleep. It suspended at 3,122 feet last January.

Fremont County

The Producers & Refiners Corp.'s No. 2, NW SE NW, Section 33-34-92, Muskrat Dome, which was drilled to 532 feet last summer after which the tools were taken down, is to be drilled to completion. A rotary rig is being moved in and it probably will try to get through the big gas sands in the Frontier and test the Dakota series for oil. It is 1½ miles northwest of the discovery well, the only well on the structure which has been drilled to the sand, which was completed in 1928 at 4,340 feet with an open flow of 75,000,000 feet of gas per day. The Producers & Refiners' No. 10, Section 14-32-95, Sand Draw, is drilling at 1,335 feet. This, also, is a rotary test which will try to get through the big gas horizons. The Kinney-Coastal Oil Co.'s No. 1 Dykeman, SE SW, Section 22-3n-1w, Pilot Butte, is drilling at 3,690 feet in pink shale above the Lakota. The Muddy gauged 63,000,000 feet of gas per day. It is through the Dakota at 3,598-3,635 feet and headed for the Lakota. The Dakota was very tight and dry and showed about 200,000 feet of gas. This sand normally is a water sand but showed no water in this test. The hole will go on down through the Morrison and test the Sundance. The Texas Production Co.'s No. 1 State, SW SW, Section 36-34-95, Alkali Butte, is drilling at 3,269 feet. It has been having casing and water trouble. The discovery well on this dome began showing a little oil at around 3,600 feet.

Carbon County

Another test to the Tensleep in Carbon County is scheduled for the Wertz Dome in the Producers & Refiners' No. 8, NE cor. NW, Section 7-26-89. This well was started in 1927 as a test to the Sundance, which had never been drilled on that structure. The 15½-inch casing was landed at 2,291 feet and the well was completed last summer at 4,150 feet as a gas well, making 80,000,000 feet a day. The rig was torn down. A new rig is being built to resume drilling. Discoveries in the Tensleep in other structures in that area attracted attention to the possibilities in that horizon on the Wertz Dome which produces large quantities of gas in the Dakota series and which was proven for gas last year in the Sundance. The Producers & Refiners' No. 2 Mahoney Dome, SE NW, Section 34-26-88, is drilling out bridge at 4,702 feet. The tools were stuck at 4,708 feet. The hole had been drilled to 4,760 feet and had swabbed as high as 75 bbls. of oil per day from the Tensleep. The same company's No. 2 O'Brien Springs, Section 11-24-88, is drilling at 880 feet. The Midwest Refining Co.'s No. 31 Eades, SW SE, Section 1-18-78, Dutton Creek, is drilling at 3,890 feet in dark gray shale with the 8⅝-inch at 3,857 feet.

Sweetwater County

The Mountain Fuel Supply Co.'s No. 1 Sullivan, SW SW, Section 10-16-104, South Baxter Basin, is bottomed at 3,635 feet and cementing cave. The Prairie Oil & Gas Co.'s No. 75-A, Section 11-26-90, Little Lost Soldier, is drilling at

(Continued on Page 190)

Natural Gasoline Manufacture

Safety Suggestions In Connection With Hydrogen Sulphide

By R. B. Roaper

Safety Director, Humble Oil & Refinery Co., Houston, Tex.*

Hydrogen sulphide is the most toxic gas associated with crude oil. It is a colorless gas, heavier than air, with the odor of rotton eggs, and in low concentrations is easily detected by its odor. However, one is unable to depend on the sense of smell in high concentrations because in such cases there is a complete paralysis of the central nervous system and collapse is sudden; the result is usually fatal.

The first place this gas is encountered is in the drilling of oil wells and in so far as I am able to find very little has been accomplished in the producing field towards the protection of men who come in contact with this gas. However, a reasonable degree of success has been obtained by piping the gas from the well to a distance of about 200 feet, where it is ignited from a riser about 25 feet high.

(Continued on Page 194)

*Before Plant Operators meeting, Breckenridge, Tex.

CONSTRUCT NEAT GUARD FOR TANK GAUGE GLASS

An easily constructed and neat appearing guard for run tank gauge glasses has been suggested by O. O. Spell, an operator at the Huntington Beach No. 2 plant of the Standard Gasoline Co. The "Booster," the company's house organ, contained the accompanying picture and described the guard as being quickly detachable. As may be seen in the picture, the main body of the guard is a half-

Gauge Glass Guard

round strip of heavy galvanized iron netting. A heavy galvanized iron form is soldered to the netting at each end and the two arms of the form extend back a convenient length and are bent to form a right angle.

Two small brackets fastened to the piping or the tank and containing two holes supports the guard. This is shown in the picture, the little prongs at A supporting the forms at the top and bottom of the guard and held by the brackets at B.

OUTPUT IN UNITED STATES CLOSE TO 200,000,000 GALLONS MONTHLY

Natural gasoline production in United States in March totaled 192,200,000 gallons, according to the latest report of the Bureau of Mines. This total of 6,200,000 gallons daily represented a drop of 170,000 gallons or 3 per cent less than the daily average for February. The production, however, was 6 per cent greater than the 5,860,000 gallons daily average for March of last year.

The decline in California production accounted for all the loss in March when compared with February. The natural gasoline production of the west coast states averaged 2,258,600 gallons in March and 2,460,700 gallons in February, a decrease of 202,100 gallons daily. This exceeds the total daily decrease for the entire country.

In Oklahoma, the production of the Oklahoma City Field, where the greatest new development is under way, increased to 71,000 gallons daily in March. Additional plant capacity has been completed since that time. The production of the Greater Seminole area was practically the same in March as in February.

Stocks of natural gasoline held at the plants on March 31 amounted to 28,281,000 gallons, an increase of 4,248,000 gallons over the February stocks. The increases were scattered throughout the Mid-Continent Field.

NATURAL GASOLINE OUTPUT FOR MARCH, 1930
(Thousands of gallons)

	Production				Stocks end of month	
	Mar., 1930	Feb., 1930	Mar., 1929	Jan.-Mar., 1930	Mar., 1930	Feb., 1930
Appalachian	9,800	9,200	9,300	29,900	4,462	3,235
Illinois, Kentucky, etc.	1,300	1,300	1,200	4,000	493	431
Oklahoma	53,500	47,300	57,000	150,800	11,291	10,089
Oklahoma City	2,200	1,600	....	5,600	698	284
Osage County	6,800	5,900	7,800	18,900	2,335	2,044
Seminole, etc.	24,200	21,800	28,200	69,600	2,515	2,332
Rest of State	20,300	18,000	21,000	56,700	5,743	5,429
Kansas	2,800	2,800	2,900	8,200	999	816
Texas	40,200	36,700	33,900	114,100	7,583	6,116
Panhandle	20,300	18,200	13,300	57,500	2,812	2,295
North Texas	3,900	3,600	4,600	10,900	1,235	975
West Central	12,400	11,800	12,800	35,700	3,071	2,425
Rest of State	3,600	3,100	3,200	10,000	465	421
Louisiana	7,500	6,000	5,100	21,200	986	809
Arkansas	2,700	2,400	2,700	7,500	291	247
Rocky Mountain	4,400	3,800	3,700	11,400	630	569
California	70,000	63,900	65,800	208,700	1,546	1,721
Long Beach	14,800	14,400	20,900	44,000	....	....
Ventura Avenue	4,800	5,700	6,300	16,000	....	....
Seal Beach	2,700	2,900	3,400	8,800	....	....
Huntington Beach	2,800	3,200	3,000	9,500	....	....
Santa Fe Springs	21,400	20,800	16,400	63,500	....	....
Rest of State	23,500	21,900	15,800	66,900	....	....
Total	192,200	178,400	181,600	555,800	28,281	24,033
Daily average	6,200	6,370	5,860	6,180	....	....
Total (thousands of barrels)	4,576	4,248	4,324	13,234	673	572
Daily average	148	152	139	147	....	....

Construction and Operation

CONSTRUCTION OF A PLANT

The Organization

The responsibility for the construction of a natural gasoline plant rests upon the general office. It is one thing to design a plant and select the desired materials and equipment, and quite another to build the plant. For this purpose an adequate construction unit is of the utmost importance. In the more active companies, such a unit is made up of several component parts or is so constituted that it may readily be expanded to take care of the construction of several plants at the same time, while in the smaller organizations only a skelton unit is maintained, around which a full construction force is built whenever a development program is under way. Some oil companies build so few plants that they contract the construction of a plant to one of the engineering or construction companies which specialize in this field.

The full personnel of a construction unit is made up of the superintendent and assistant superintendent, field engineer, yard foreman, pipe line foreman, welding foreman, carpenter foreman, warehouseman, clerk, transportation foreman, a number of straw bosses, connection men, and laborers.

The superintendent is in full charge of construction and receives his orders from the general office—generally from the chief engineer. He is personally responsible for the translation of the plant design into a working model. He is presumed to be a man thoroughly familiar with concrete work, carpentry, welding, pipe lining, and general construction. Above all, he must be a good manager. His job from beginning to end is to see that all of the foremen understand their work and that they are always provided with men and materials to proceed with their several tasks without lost motion.

The assistant superintendent gives more detailed attention to the work for which the superintendent is responsible. He employs most of the labor and assists the superintendent in the selection of foremen and straw bosses. He co-ordinates the work of the plant yard with the pipe lining, and sees to the flow of materials and men to both jobs. It is his task to keep the welders and carpenters "lined up" ahead of time. If he is also yard foreman, he lays out the work for the various foremen on the several jobs. There may be as many as 20 or 30 crews at work at the same time.

Yard Man

The yard man is in charge of all the work in the plant yard. His right hand man is the field engineer, who gives effect to the layout as planned by the blue prints. His immediate responsibility is to check up on materials needed for his several jobs and to "push" the gangs on those jobs. His job is to get materials and tools for the men and get work out of the men. The engineer and yard foreman check foundations, while the engineer makes all grades and checks all of the engineering features of the construction.

Adequate foremanship, both qualitatively and quantitatively, is essential to a construction job. When one considers that labor represents from 15 to 35 per cent of the cost of a plant, it is not difficult to see the importance of intelligent direction of that labor. This is peculiarly true for the further reason that only a portion of the available labor is experienced in oil field work, the balance coming seasonally from cotton or wheat field. Skilled labor is confined to carpenters, welders, and some connection men. It is good practice, therefore, to supplement the supervision staff by a goodly number of straw bosses, one for from three to ten men. The small extra pay that goes to the straw boss pays dividends many times over in time and expense. The straw boss is not only a supervisor but a worker as well.

In charge of the warehouse there should be a man familiar with gasoline plant equipment. He must contact with the superintendency, yard man, and pipe line foreman as to their requirements, and obtain what has not been ordered by the general office. It is his duty, also, to keep a full line of tools ready for the several jobs. A good material man is often the difference between a good and poor construction record. The transportation system is at the service of the warehouseman, and it is up to him to get materials on location and to do it on such a plan as will never tie up the work. Speed and action are essential, for unrecoverable gas is escaping every day while the plant is in the process of building.

LIQUEFIED GAS IN CANADA

CHATHAM, Ontario, May 3.—It is reported here that Imperial Oil, Ltd., has plans well under way for a new project to utilize and market a portion of the surplus gas of the Turner Valley Field. The project involves the liquefying of the natural gas and its shipment in steel drums to points in the prairie provinces and as far west as Vancouver, British Columbia.

The scheme calls for a small addition to the existing gasoline plant at East Calgary, but it is understood that no very large expense is involved in the project. If present plans are successful, shipments should be made before July 1.

Officials of Imperial Oil, Ltd., feel that the Canadian West offers a good field for the distribution of liquefied gas, although there are numerous problems still to be worked out in connection with marketing. Imperial Oil, Ltd., will market its product under the name of Royal Gas.

NEW LOUISIANA PLANT

SHREVEPORT, La., May 3.—The Arkansas Natural Gas Corp. is well along with construction of a natural gasoline plant on the Kilgore lease in Section 31-23-11, Carterville district of Bossier, Parish, Louisiana, designed to handle 4,000,000 to 5,000,000 feet of casinghead gas per day turning out 10,000 to 15,000 gallons of gasoline. The plant is expected to be in operation by May 15.

NEW PHILLIPS PLANT

The Phillips Petroleum Co. will start construction immediately of a new gasoline plant in Ector County of West Texas. The plant will have a capacity of 20,000,000 cubic feet of gas daily. This is the third new plant to be authorized by the Phillips company in the past 30 days. Its new plant in the Oklahoma Field is to be increased from 50,000,000 to 100,000,000 cubic feet.

Brief Items for Petroleum Refiners

DIVISION OF REFINING APPOINTS COMMITTEES

NEW YORK, May 3.—The American Petroleum Institute's Division of Refining at its meeting this week authorized the appointment of two new committees, a committee on Standardization of Refinery Equipment and a Committee on Program for the Annual Meeting. The first committee will carry on the work of standardization in the refining branch of the industry, while the second group will outline a program relative to refining for the annual meeting. The personnel of the committees will be announced shortly. The meeting of the refining division committee was attended by W. M. Irish, John L. Gray, E. W. Isom, G. R. Nutty, J. Howard Pew, E. G. Seubert, C. L. Suhr, P. M. Miskell, and R. P. Anderson, secretary.

Following the directors' meeting, it was also announced that the American Petroleum Institute's Division of Marketing has arranged for a meeting to be held in Washington on June 2 with the Committee on Specifications and Tolerance of the National Conference on Weights and Measures to discuss ways and means of meeting new requirements for grease dispensing devices and to seek postponement of their effective date. The National Conference at its meeting last year adopted specifications and tolerances for grease-measuring devices and recommended that they be put into effect on July 1, 1930.

According to a statement by Paul E. Hadlick, secretary of the Institute's division of marketing, investigation has shown that while many oil companies have made efforts to obtain the equipment necessary to comply with the revised specifications, few makers of grease-dispensing equipment have undertaken the manufacture of accurate measuring devices. In addition, Mr. Hadlick stated, no indicating device suitable for adapting present greasing equipment to the new specifications has yet been placed on the market.

The Institute will have representatives at the Washington conference, and oil companies interested are also being asked to send representatives. The session will be held at the United States Bureau of Standards.

RE-ELECT OFFICERS

MUSKEGON, Mich., May 5.—Officers of the Old Dutch Refining Co. were re-elected last week in Chicago at the first annual meeting, according to John Borden of Chicago, who recently was named president to succeed Walter E. Anderson, resigned.

Ernest L. Hughes, of Hughes & Co., Chicago fuel marketers, is vice president and general manager of the Muskegon refining plant of the company. F. H. Duggan, of Chicago, is secretary, and H. Buining, of Muskegon, treasurer.

Mr. Borden made his first visit in several weeks at the Muskegon plant. The company is running about 2,000 bbls. of crude oil daily through the plant, the most modern in the Muskegon oil field erected last fall at a cost of about $400,000.

DESTROYED BY FIRE

CHICAGO, May 3.—The plant of the Dubroil Products Co., of 6265 West 65th Place, was destroyed by fire caused by the explosion of a still used for reclaiming used motor oils and greases. Two employes were killed and one badly injured by the explosion and the fire which resulted. The fire took place early Wednesday morning, April 30.

PHILLIPS COMPLETING PLANS FOR GASOLINE LINE FROM PANHANDLE

Plans of the Phillips Petroleum Co. to build a pipe line from its refinery located in the Texas Panhandle to St. Louis Mo., are now said to be practically completed. The line will be used to transport gasoline and other refined products and will have a capacity around 20,000 bbls. daily.

The Phillips company is known to have had the construction of the line under consideration for some time. During the past two years the company, for years a large producer of crude oil and manufacturer of natural gasoline, has become active as a refiner and marketer of petroleum products. The Borger refinery has been increased until it now has a rated capacity of 15,000 bbls. of crude oil daily. The company also has a large natural gasoline output in the Texas Panhandle area totaling approximately 7,500 bbls. daily at the present time.

A number of large and small jobbing concerns in the Southwest and Middle West have also been acquired over the past year and the company's sales through these outlets now exceed the refinery's gasoline output. Several jobbing concerns have recently been acquired in South Illinois and other points in the St. Louis area.

The gasoline line will be used to serve these retail outlets reducing the present heavy rail charges from the Panhandle refinery. It is also reported that the line will be in a position to act as a common carrier serving other refineries in the Mid-Continent Field with distribution at points served by the line.

The Phillips project is the second pipe line for the transportation of refinery products to assume definite form. The Barnsdall Oil Corp., as recently announced, has completed plans for the construction of a line extending north from its Okmulgee, Okla., refinery to Waterloo, Iowa, and terminating at Chicago to Milwaukee, Wis. This line would serve Barnsdall stations located at points adjacent to the line.

Railroad Position

While the Barnsdall and Phillips plans are nearing completion it is known that railroads serving the Mid-Continent refining groups are endeavoring to postpone the construction of these lines and others under consideration. The movement of refinery products is the largest source of revenue for several of the southwestern lines and an important factor in earnings for connecting lines in the Middle West. This revenue is of course threatened by the gasoline pipe line projects.

Conferences between railroad and Mid-Continent oil company executives have been held. At these conferences the possibility of reducing present rail rates, particularly on long hauls have been discussed. If satisfactory rate adjustments can be secured it is assumed that all the pipe line plans will be indefinitely postponed.

CALIFORNIA STANDARD UTILIZES FLUE GASES AS SAFETY MEASURE

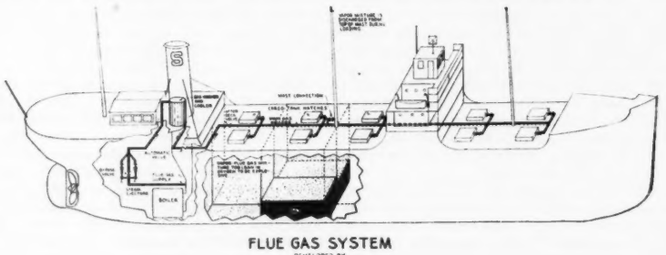
Standard Oil Co. of California announces the dedication to public use of one of its most important developments in the fire protection field—a system by which explosions on tank ships are made virtually impossible. During the past few years a number of such explosions have occurred in some instances with serious loss of both life and property. Generally speaking they are the result of the accidental ignition of the highly explosive mixture of oil vapors and air formed when a volatile oil such as crude or gasoline is pumped out of a tank ship, and air flows into the tanks to take its place.

While Standard Oil of California's fleet has been fortunate enough never to have suffered such an explosion, the company has realized the danger under which tankers inherently operate, and several years ago company engineers started investigating methods by which the potential hazards could be eliminated. Realizing that an explosion cannot occur unless the oxygen of the air is present to combine with the petroleum vapors, the simplest and most direct way of eliminating the hazard appeared to be some means of filling the tanks with some gas which contained little or no oxygen.

Fortunately, no special apparatus for the manufacture of such a gas is necessary on a steamship; for tremendous quantities of flue gas, from which the oxygen has been consumed by the boiler fires, are constantly passing up the stack. This is, of course, a waste product which, when properly cooled and washed makes an ideal inert gas for introduction into the vapor space of the cargo tanks. The accompanying sketch shows diagrammatically the way this plan has been put into effect on several Standard Oil ships.

At first thought, this plan of putting gases from the boiler fires into a ship's tank might appear to be anything but a safeguard for the ship; but if the layout is examined it will be seen that, as the gases are withdrawn from the stack, they flow through a washer in which a deluge of cold salt water brings the temperature of the gas down to practically that of the sea and washes out any soot that it may carry. As a still further safeguard, an automatic valve on the cooler outlet is held open by a steam piston against the pressure of heavy springs. Steam is supplied to the piston from the steam jet pumps used to pull the flue gas from the stack; should the steam supply fail, the

(Continued on Page 194)



FLUE GAS SYSTEM
DEVELOPED BY
STANDARD OIL COMPANY OF CALIFORNIA

SPAIN MONOPOLY MAY BE SUPPRESSED SOON

NEW YORK, May 3.—Early suppression of the Spanish Oil Monopoly is looked for by the Spanish Government as a corrective measure to relieve the depreciation of the exchange rate on pesetas, according to cabled reports from Madrid. Official confirmation is lacking.

The Spanish Petroleum Monopoly went into force by royal decree in 1927, and has controlled the petroleum business of Spain since that time. At the time, the Monopoly took over properties of the Standard Oil Co. of New Jersey, Royal Dutch-Shell, and other oil concerns in Spain, and settlement for the confiscation of these properties was a matter requiring two years' negotiations with the Spanish Government.

Since the monopoly came into being in Spain, Russia has received large contracts for gasoline and kerosene, although two prominent American companies also handle considerable of the Spanish gallonage. Discontinuance of the monopoly, however, would throw the Spanish market open to all comers.

EMPIRE TANKER SHIPMENTS

CHICAGO, May 3.—The loading dock which the Empire Oil & Refining Co. is building at its new refinery at East Chicago, Ind., will be ready for use the latter part of this month. The volume of petroleum products which will be transported by water in the region of the Great Lakes during 1930 will far exceed that of any previous year. The Standard Oil Co. of Indiana has its fleet of tankers and last year the Shell Petroleum Corp. had one tanker at its disposal.

This year each of the four large refineries in the Calumet region is preparing to make deliveries by tanker to the lake ports where they have established bulk storage. The cost of transporting gasoline in bulk by tanker to Detroit was estimated by an executive of one of the large oil companies at "not to exceed three-eighths cent per gallon from Chicago to Detroit." The tank car rate is 1.65 cents per gallon.

FIRE DESTROYS JOBBERS' TANKS

Fire destroyed a large portion of the storage plants of the Interocean Sales Corp. and threatened the Fort Dearborn Refining Co.'s refinery near Chicago on May 5 following an explosion of a tank truck while loading. The fire originated near a warehouse filled with barrels and then spread into the yard where several storage tanks were destroyed. The further spread of the fire was held in check and the Fort Dearborn refinery located nearby was not touched.

SHELL IN NEW QUARTERS

CHICAGO, May 3.—The Shell Petroleum Co. has been consolidating its various refinery sales offices on the fourteenth floor of the building at 624 South Michigan Avenue. The office is the headquarters of regional director, W. K. Evans, his territory being east of the Mississippi River to Buffalo and north of the Ohio River to the Canadian boundary.

BUYS MORE STATIONS

The Phillips Petroleum Co. has purchased the entire business of three more oil companies located in the Central West. They are the Sloan Oil Co., of Albia, Iowa, the Mount Vernon Oil Co., of Mount Vernon, Ill., and the Newaygo Oil Co., of Shawnee, Okla.

Griscom-Russell

Heat Transfer Apparatus

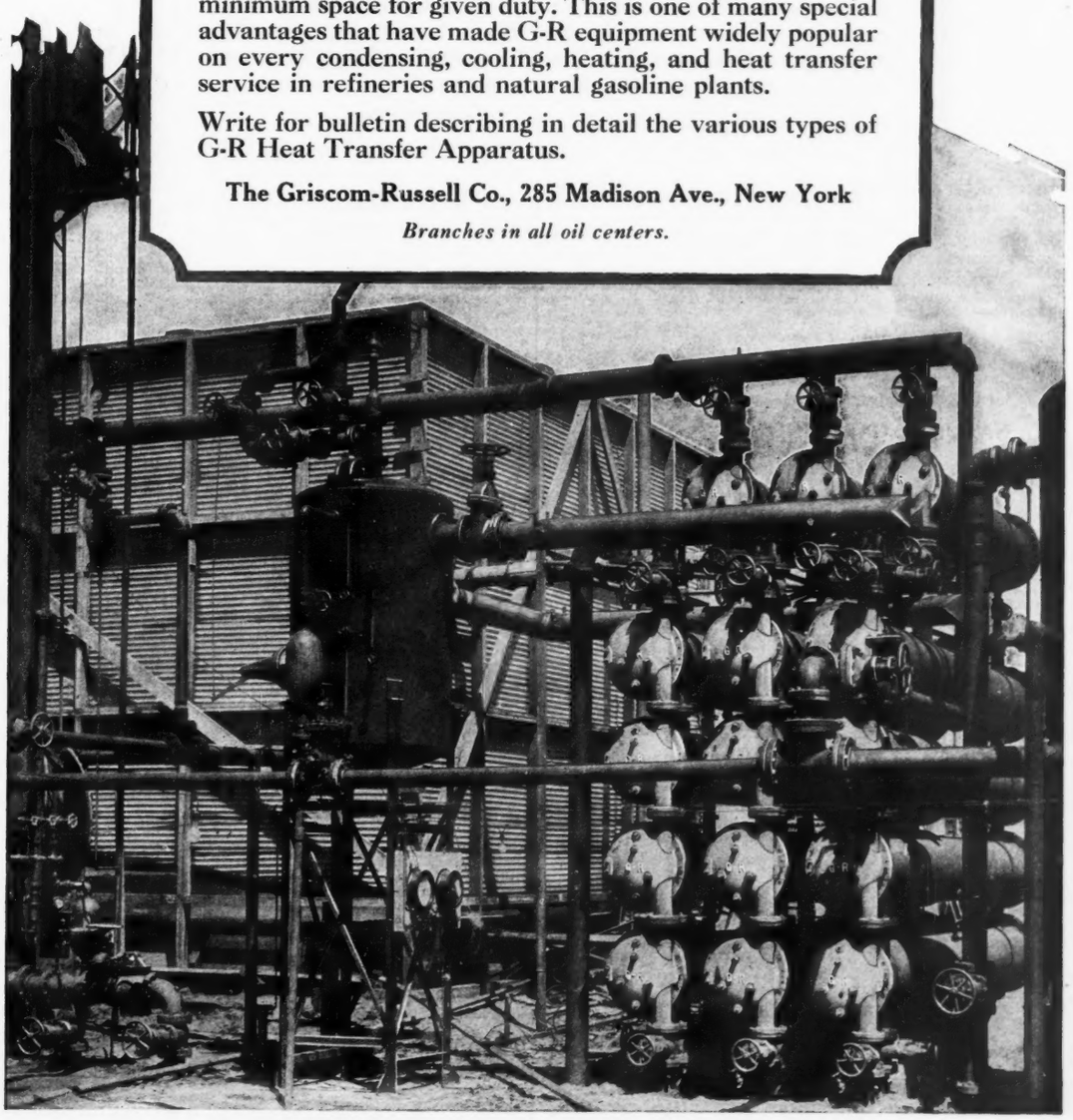
NOTE the compact arrangement of this group of G-R Heat Exchangers. The head connections are arranged to permit close spacing without the complication of elbows or inter-connecting piping.

The design of G-R Heat Transfer Apparatus also provides exceptional compactness of the units themselves, requiring minimum space for given duty. This is one of many special advantages that have made G-R equipment widely popular on every condensing, cooling, heating, and heat transfer service in refineries and natural gasoline plants.

Write for bulletin describing in detail the various types of G-R Heat Transfer Apparatus.

The Griscom-Russell Co., 285 Madison Ave., New York

Branches in all oil centers.



REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

GASOLINE AND NAPHTHA

	May 6		Apr. 29		Apr. 22	
OKLAHOMA (Group 3)—						
50-52 450 endpoint	.07	.07¼	.07	.07¼	.07	.07¼
56-58 450 endpoint	.07	.07¼	.07	.07¼	.07	.07¼
*58-60 437 endpoint (U. S. Motor)	.075		†.07	.07½	.075	
*60-62 437 endpoint	†.07¼	.07½	.075		.075	
*60-62 400 endpoint	.0775		†.07½	.08	†.07½	.07¾
*64-66 375 endpoint	.0812		.0812		†.07¾	.08
68-70 360 endpoint	.08¼	.08½	.08¼	.08½	.08¼	.08½
64-66 437 endpoint (blend)	.06¾	.07	.06¾	.07	.06½	.07
NORTH TEXAS—						
56-58 450 endpoint	.06¾	.07	.06¾	.07	.06¾	.07
58-60 450 endpoint	.06¾	.07	.06¾	.07	.06¾	.07
58-60 437 endpoint (U. S. Motor)	.07	.07¼	.07	.07¼	.07	.07¼
60-62 400 endpoint	.07¼	.07½	.07¼	.07½	.07¼	.07½
64-66 390 endpoint	.07½	.07⅝	.07½	.07⅝	.07½	.07⅝
64-66 375 endpoint	.07⅝	.07⅞	.07⅝	.07⅞	.07⅝	.07⅞
68-70 360 endpoint	.08	.08¼	.08	.08¼	.08	.08¼
64-66 437 endpoint (blend)	.06½	.06¾	.06½	.06¾	.06½	.06¾
***NORTH LOUISIANA—**						
58-60 437 endpoint (U. S. Motor)	.07¾		.07¾		.07¾	
***ARKANSAS—**						
58-60 437 endpoint (U. S. Motor)	.07¾		.07¾		.07¾	
PENNSYLVANIA—						
52-54 Naphtha	.07½	.07¾	.07½	.07¾	.07¼	.07½
54-56 Naphtha	.07¾	.08	.07¾	.08	.07½	.07¾
58-60 Gasoline	.08	.08¼	.08	.08¼	.07¾	.08
60 Gasoline	.08¼	.08½	.08¼	.08½	.08	.08½
62 Gasoline	.08½	.08¾	.08½	.08¾	.08¼	.08½
64 Gasoline	.08¾	.09	.08¾	.09	.08½	.08¾
68-70 350 endpoint gasoline	.09	.09¼	.09	.09¼	.08¾	.09
CALIFORNIA—						
58-60 437 endpoint (U. S. Motor) domestic	.07	.07½	.07	.07½	.07½	
CHICAGO DISTRICT (Based on Group 3)—						
50-52 450 endpoint (Naphtha)	.07	.07¼	.07	.07¼	.07	.07¼
56-58 450 endpoint	.07	.07¼	.07	.07¼	.07	.07¼
58-60 437 endpoint (U. S. Motor)	.07⅛	.07½	.07⅛	.07½	.07⅛	.07½
60-62 400 endpoint	.07½	.07¾	.07½	.07¾	.07½	.07¾
64-66 375 endpoint	.07¾	.08	.07¾	.08	.07¾	.08
68-70 360 endpoint	.08	.08¼	.08	.08¼	.08	.08¼
64-66 437 endpoint (blend)	.07¼	.07½	.07¼	.07½	.07¼	.07½
GULF COAST (Export)—						
58-60 (U. S. Motor)	.08		.08		.08	
60-62 400 endpoint	.09		.09		.09	
61-63 390 endpoint	.09¼		.09¼		.09¼	
64-66 375 endpoint	.09½		.09½		.09½	

*Louisiana, Arkansas, Mississippi and East Texas delivery.

NATURAL GASOLINE

	May 6		Apr. 29		Apr. 22	
OKLAHOMA (Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.06½	.06⅝	.06½	.06⅝	.06½	.06⅝
Grade AA, 80-87.9, 375 e.p., rec. 90%	.06½		.06½		.06½	
Grade B, 76-83.9, 375 e.p., rec. 85%	.06½		.06½		.06½	
Grade BB, 84-92, 375 e.p., rec. 85%	.06½		.06½		.06½	
Grade C, 80-92, 375 e.p., rec. 78%	.06½		.06½		.06½	
NORTH TEXAS—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.06½		.06½		.06½	
Grade AA, 80-87.9, 375 e.p., rec. 90%	.06½		.06½		.06½	
Grade B, 76-83.9, 375 e.p., rec. 85%	.06½		.06½		.06½	
Grade BB, 84-92, 375 e.p., rec. 85%	.06½		.06½		.06½	
Grade C, 80-92, 375 e.p., rec. 78%	.06½		.06⅜	.06½	.06⅜	.06½
NORTH LOUISIANA—						
Grade AA, 80-87, 375 e.p., rec. 90%	.06½	.06¾	.06½	.06¾	.06½	.06¾
Grade BB, 84-92, 375 e.p., rec. 85%	.06½	.06¾	.06½	.06¾	.06½	.06¾
Grade C, 80-92, 375 e.p., rec. 78%	.06½		.06½		.06½	
CALIFORNIA—						
75-78 375-390 endpoint	.06¾	.07¾	.06¾	.07¾	.06¾	.07¾
CHICAGO DISTRICT (Based on Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.06½		.06½		.06½	
Grade AA, 80-87.9, 375 e.p., rec. 90%	.06½		.06½		.06½	
Grade B, 76-83.9, 375 e.p., rec. 85%	.06½		.06½		.06½	
Grade BB, 84-92, 375 e.p., rec. 85%	.06½		.06½		.06½	
Grade C, 80-92, 375 e.p., rec. 78%	.06½		.06½		.06½	

BURNING OIL

	May 6		Apr. 29		Apr. 22	
OKLAHOMA (Group 3)—						
41-43 water white kerosene	.04¼	.04½	.04¼	.04½	.04¼	.04½
42-44 water white kerosene	.04½	.04¾	.04½	.04¾	.04⅝	.05
NORTH TEXAS—						
41-43 water white kerosene	.04⅛	.04¼	.04⅛	.04¼	.04⅛	.04¼
40-42 water white kerosene	.04	.04⅛	.04⅛		.04⅛	
***NORTH LOUISIANA—**						
41-43 water white kerosene	.05	.05¼	.05¼	.05⅜	.05¼	.05⅜
***ARKANSAS—**						
41-43 water white kerosene	.05	.05⅛	.05¼	.05⅜	.05¼	
PENNSYLVANIA—						
43 Kerosene prime white	.05¼		.05½		.05½	
45 Kerosene water white	.05½		.05¾		.05¾	
46 Kerosene water white	.05¾	.06	.06	.06¼	.06	.06¼
47 Kerosene water white	.06¼	.06½	.06¼	.06½	.06¼	.06½
300 Mineral Seal	.07		.07		.07	
CALIFORNIA—						
38-40 water white Kero. (high burning test)	.04	.04½	.04	.04½	.04	.04½
Engine distillate, 43-44, 445 endpoint	.06	.06½	.06	.06½	.06½	.07
Engine distillate, 42-44, 480 endpoint	.05	.05½	.05	.05½	.06	.06½
CHICAGO DISTRICT (Based on Group 3)—						
41-43 water white kerosene	.04⅜	.04½	.04⅜	.04⅝	.04⅜	.04⅝
42-44 water white kerosene	.04½	.05	.04⅝	.05	.04⅝	.05
GULF COAST (Export)—						
41-43 prime white	.06		.06		.06	
41-43 water white	.07		.07		.07	

*Louisiana, Arkansas, Mississippi and East Texas delivery.

FUEL OIL

	May 6		Apr. 29		Apr. 22	
OKLAHOMA (Group 3)—						
Below 18 Fuel Oil, per bbl.	.55	.60	.55	.60	.57½	.65
18-22 Fuel Oil, per bbl.	.57½	.62½	.57½	.62½	.60	.65
20-22 Fuel Oil, per bbl.	.62½	.67½	.62½	.67½	.65	.70
22-26 Fuel Oil, per bbl.	.65	.70	.65	.70	.70	.75
24-26 Fuel Oil, per bbl.	.70	.80	.70	.80	.80	.85
26-30 Fuel Oil, per bbl.	.80	.85	.80	.85	.82½	.87½
28-30 Fuel Oil, per bbl.	.85	.95	.85	.95	.85	1.00
32-36 Gas Oil (industrial)	.02¼	.02½	.02⅜	.02½	.02⅜	.02⅝
32-36 Gas Oil (straw color)	.02⅜	.02⅝	.02½	.02⅝	.02½	.02¾
36-38 Distillate	.02¾	.03	.02¾	.03	.02⅞	.03
38-40 Straw Distillate	.03	.03⅛	.03	.03⅛	.03	.03¼
NORTH TEXAS—						
Below 20 Fuel Oil, per bbl.	.50	.55	.50	.55	.50	.60
24-26 Fuel Oil, per bbl.	.67½	.75	.67½	.75	.75	.80
32-36 Gas Oil (straw)	.02¼	.02⅜	.02¼	.02⅜	.02¼	.02½
38-40 Straw Distillate	.02¾	.03	.02¾	.03	.02⅞	.03
***NORTH LOUISIANA—**						
18-20 Fuel Oil, per bbl.	.80	.90	.80	.90	.80	.90
30-32 Gas Oil	.02⅝	.02¾	.02¾	.03	.03	
***ARKANSAS—**						
33-36 Distillate	.02¾	.03	.02¾	.03	.03	
30-32 Gas Oil	.02¾		.02¾		.03	
16-22 Refinery Fuel Oil, per bbl.	.80	.90	.75	.85	.75	.85
GULF COAST (South Texas)—						
Gas Oil	.04		.04		.04	
Bunker C Fuel (cargo lots), per bbl.	.80	.85	.75	.80	.75	.80
Bunker C Fuel (small lots)	1.05	1.10	1.05	1.10	1.05	1.10
PENNSYLVANIA—						
30-34 Fuel Oil	.04		.04¼		.04⅜	
36-40 Fuel Oil	.04¼		.04¼	.04⅜	.04⅜	.04½
CALIFORNIA—						
33-36 Distillate	.02½	.03	.02½	.03	.02¾	.03¼
26-32 Distillate	.01¾	.02	.01¾	.02	.01¾	.02½
15-20 Fuel Oil, Bunker (at tidewater)	.60	.65	.60	.65	.65	.75
15-20 Fuel Oil (cargo lots), per bbl.	.55	.65	.55	.65	.57½	.70
27 plus Diesel, per bbl.	.80	.90	.80	.90	.85	1.00
CHICAGO DISTRICT (Based on Group 3)—						
22-26 Fuel Oil, per bbl.	.70	.75	.70	.75	.72½	.77
18-22 Fuel Oil, per bbl.	.57½	.62½	.55	.60	.57½	.62½
28-30 Fuel Oil, per bbl. (zero)	.90	.92½	.90	.95	.90	.95
32-36 Gas Oil (zero)	.02½	.02¾	.02½	.02⅝	.02⅝	.02⅞
32-36 Gas Oil (industrial)	.02⅞	.02½	.02½		.02⅜	.02½
36-38 Distillate	.02½	.02¾	.02½	.02¾	.02½	.02¾
38-40 Straw Distillate	.02¾	.03	.02¾	.03	.02¾	.03

*Louisiana, Arkansas, Mississippi and East Texas delivery.

LUBRICATING OIL AND WAX

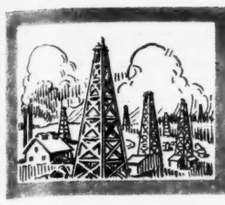
	May 6		Apr. 29		Apr. 22	
OKLAHOMA (Group 3)—						
100 vis., 2 color, 20-25 cold test	.06	.07	.06	.07	.06	.07
100 vis., 3 color 20-25 cold test	.05½	.06	.05½	.06	.05½	.06
150 vis., 3 color, 20-25 cold test	.08½	.09	.08½	.09	.08½	.09
150 vis., 4 color, 20-25 cold test	.08	.08½	.08	.08½	.08	.08½
180 vis., 3 color, 23-28 cold test	.10	.10½	.10	.10½	.10	.10½
180 vis., 4 color, 23-28 cold test	.09½	.10	.09½	.10	.09½	.10
180 vis., 5 color, 23-28 cold test	.09	.09½	.09	.09½	.09	.09½
200 vis., 3 color, 23-28 cold test	.11½	.12	.11½	.12	.11½	.12
200 vis., 4 color, 23-28 cold test	.11	.11½	.11	.11½	.11	.11½
200 vis., 5 color, 23-28 cold test	.10½	.11	.10½	.11	.10½	.11
240 vis., 3 color, 25-30 cold test	.15	.15½	.15	.15½	.15	.15½
240 vis., 4 color, 25-30 cold test	.14	.14½	.14	.14½	.14	.14½
240 vis., 5 color, 25-30 cold test	.13½	.14	.13½	.14	.13½	.14
280 vis., 3 color, 25-30 cold test	.17½	.18	.17½	.18	.17½	.18
280 vis., 4 color, 25-30 cold test	.16½	.17	.16½	.17	.16½	.17
280 vis., 5 color, 25-30 cold test	.15	.15½	.15	.15½	.15	.15½
Cylinder Stocks:						
600, steam refined, light green	.09	.11	.09	.11	.09	.11
600, steam refined, dark green	.08	.10	.08	.10	.08	.10
190-200 vis., D color Bright Stock	.41	.42	.41	.42	.41	.42
150-160 vis., D color Bright Stock	.37		.37		.37	
*150-160 vis., D color Bright Stock	.35	.36½	.35	.36½	.36	.36½
150-160 vis., E color Bright Stock	.32	.35	.32	.35	.32	.35
Waxes:						
124-126 White Crude Scale Wax	.02⅛	.02⅜	.02¼	.02½	.02¼	.02½

*High cold test. All bright stock prices are for domestic movement.

PENNSYLVANIA—						
34 Neutral	.06¾	.07	.06¾	.07	.07	.07¼
34 Sundebloom	.07¾		.07¾		.07¾	
36 Miners' Neutral	.07½		.07½		.07½	
150, 3 color	.15½	.16½	.15	.16	.15	.17
180, 3 color	.21	.22	.21	.22	.21	.22
200, 3 color	.25	.26	.25	.26	.25	.26
220, 3 color	.27	.28	.27	.28	.30	
600, steam refined	.23	.23½	.23	.24	.23	.24
635, steam refined	.26	.27	.26	.27	.27	.29½
650, steam refined	.29½	.30	.29½	.30	.29½	.30
600, Pennsylvania Flash	.31	.32	.31	.32	.31	.32
630, Pennsylvania Flash	.35	.36	.35	.36	.35	.36
600, E filtered	.28½	.30	.28½	.30	.28½	.30
600, D filtered	.34½	.35	.34½	.35	.35	.35½
Pennsylvania Bright Stocks	.39	.40	.39½	.41	.39½	.41
*122-124 White Crude Scale Wax	.02⅝	.02¾	.02⅝	.02¾	.02⅝	.02¾
124-126 White Crude Scale Wax	.02¾		.02¾		.02¾	

*At New York.

GULF COAST (South Texas)—						
100 vis., 2-2½ color, pale oil	.06½	.06¾	.06½	.06¾	.06½	.06¾
200 vis., 3 color, pale oil	.09½		.09½		.09¼	.09½
300 vis., 3 color, pale oil	.10¾		.10¾		.10¾	
500 vis., 3½ color, pale oil	.12	.12¾	.12	.12¾	.11½	.12
750 vis., 3½ color, pale oil	.13½		.13½			
1,200 vis., 3½ color, pale oil	.16		.16			
2,000 vis., 4 color, pale oil	.17		.17			
200 vis., 5-6 color, red oil	.08¾	.09	.08¾	.09	.08½	.08¾
300 vis., 5-6 color, red oil	.10	.10¼	.16	.10¼	.09½	.10



REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

500 vis., 5-6 color, red oil	.11¼		.11¼		.10¾	.11¼
750 vis., 5-6 color, red oil	.12¾	.13	.12¾	.13	.12¾	
1,200 vis., 5-6 color, red oil	.15		.15			
2,000 vis., 6 plus color, red oil	.17		.17			
200 vis., 2½ color, filtered oil	.11	.12	.11	.12	.11	.12
300 vis., 2½ color, filtered oil	.12	.13	.12	.13	.12	.13
500 vis., 2½ color, filtered oil	.14½	.15	.14½	.15	.14½	.15
750 vis., 2½-3 color, filtered oil	.17	.19	.17	.19	.17	.19
CALIFORNIA—						
130 vis., 2½-3 color	.10¼	.10½	.10¼	.10½	.10¼	.10½
200 vis., 2½-3 color	.11½	.11¾	.11½	.11¾	.11½	.11¾
300 vis., 3-3½ color	.13	.13½	.13	.13½	.13	.13½
350 vis., 3½-4 color	.13½	.13¾	.13½	.13¾	.13½	.13¾
400 vis., 3½-4 color	.15	.15½	.15	.15½	.15	.15½
Red Neutral:						
200 vis., 4½-5 color	.11	.11¼	.11	.11¼	.11	.11¼
300 vis., 5-6 color	.12	.12¼	.12	.12¼	.12	.12¼
400 vis., 5-6 color	.13¼	.14	.13¼	.14	.13¼	.14
500 vis., 4½-5 color	.15¼	.15½	.15¼	.15½	.15¼	.15½
500 vis., 5-6½ color	.15	.15¼	.15	.15¼	.15	.15¼
600 vis., 6½ plus color	.16	.16¼	.16	.16¼	.16	.16¼

Note—Bright stocks are not manufactured commercially on the Pacific Coast.

NEW YORK (BAYONNE) REFINERY PRICES

	May 6		Apr. 29		Apr. 22	
Gasoline, U. S. Motor, 58-60, 437	.08½	.09¾	.08½	.09¾	.08½	.09½
Kerosene, water white, 41-43	.07¼	.07¾	.07¼	.07¾	.07¼	.07¾
*Fuel Oil, Bunker "C," 14-16, per bbl.	1.15		1.15		1.15	
Fuel Oil, Diesel, 28-30, per bbl.	2.00		2.00		2.00	
Gas Oil, 32-36 gravity	.04¾	.05¼	.04¾	.05¼	.04¾	.05¼
25 pale Paraffin Oil	.10½		.10½		.10½	
28 pale Paraffin Oil	.07¼		.07¼		.07¼	
285 red Paraffin Oil	.12½		.12½		.12½	
250 red Paraffin Oil	.11½		.11½		.11½	
225 red Paraffin Oil	.10		.10		.10	
200 red Paraffin Oil	.09¼		.09¼		.09¼	
Refined Wax:						
120-122 a.m.p., per lb.	.03½		.03½		.03⅝	
125-127 a.m.p., per lb.	.03¾		.03¾		.04	
130-132 a.m.p., per lb.	.04⅜		.04⅜		.04½	
133-135 a.m.p., per lb.	.05¼		.05¼		.05½	
135-137 a.m.p., per lb.	.05½		.05½		.05⅝	
Petrolatum in barrels, in carload lots, per pound:						
Dark Green	.01⅞		.01⅞		.01⅞	
Amber	.03⅜		.03⅜		.03⅜	
Extra Amber	.03½		.03½		.03½	
Cream	.06⅜		.06⅜		.06⅜	
Lily White	.06½		.06½		.06½	
Snow White	.08⅜		.08⅜		.08⅜	

*Lighterage 5.0 cents a barrel extra.

NEW YORK (BAYONNE) EXPORT PRICES

	May 6	Apr. 29	Apr. 22
Kerosene, prime white	.07¾	.07¾	.07¾
Kerosene, water white	.09	.09	.09
600, steam refined cylinder stocks, in bbls.	.31½	.31½	.31½
635, steam refined	.33½	.33½	.33½
650, steam refined	.37½	.37½	.37½
600, Pennsylvania Flash	.39	.39	.39
630, Pennsylvania Flash	.42	.42	.42
600, Warren E	.38½	.38½	.38½
600, Oil City E	.37½	.37½	.37½
Light 140-150 Bright Stocks	.48	.48	.48
Dark 140-150 Bright Stocks	.46	.47	.47

LOS ANGELES EXPORT PRICES

	May 6		Apr. 29		Apr. 22	
Kerosene, water white	.03¾	.04¼	.03¾	.04¼	.03¾	.04¼
*U. S. Motor Gasoline, 53-55, 437 e.p.	.06½	.06¾	.01½	.06¾	.06¼	.06¾

*Prices on coastwise shipments.

CRUDE OIL PRICES

OKLAHOMA, KANSAS, NORTH AND EAST CENTRAL TEXAS

Oklahoma City—Same as other Mid-Continent price schedule except Empire Pipe Line Co. posted all oil 40 gravity and above at $1.43 on April 10.
Corsicana heavy (April 10, 1930).....$ .80
Other fields .....See gravity table

*Posted by Magnolia Petroleum Co.

TEXAS PANHANDLE

Gray County, Wheeler County and Carson-Hutchinson Counties—See gravity table.

In Noel-McConnell district Prairie Oil & Gas Co. posted April 10, below 30 degrees, 75½ cents, with 5-cent differential upward to 34-34.9, $1.00½, and then a 3-cent differential upward to 44 and above at $1.35½.

WEST TEXAS

Iatan* .....Same as North Texas
Crane-Upton-Crockett, Pecos, Winkler Mitchell and Ector .....
.....See gravity table, Column 3
Howard and Glasscock .....
.....See gravity table, Column 9
Chalk† (April 10, 1930) .....$ .75

*Includes Westbrook Field. †Posted by Humble Oil & Refining Co.

ARKANSAS-NORTH LOUISIANA

Smackover, below 24 gravity (April 11, 1930 .....$ .90
Smackover, 24 gravity and above (April 11, 1930) 1.05
Carterville, Sarepta and Cotton Valley, below 36 gravity (April 11, 1930)... .85
Bellevue (April 11, 1930) 1.15
Urania (April 11, 1930) ..... .95
East El Dorado (April 11, 1930) ..... .90
Other fields .....See gravity table

Cotton Valley crude about 36 gravity takes same gravity price schedule as shown for North Louisiana and Arkansas crude in Mid-Continent gravity price table.

Note—Smackover, Cotton Valley and Bellevue posted by Standard Oil Co. of Louisiana and Magnolia Petroleum Co.; Urania posted by Louisiana Oil Refining Corp.; East El Dorado posted by Magnolia Petroleum Co.

GULF COAST

Grade A (April 10, 1930)* $1.10
Grade B, 25 degrees and upward ....
.....See gravity table
Jennings, La. (April 10, 1930)† 1.10
Refugio (light) .....Same as Grade B
Refugio (heavy) (April 10, 1930)‖ ... .85
Sorrento (April 10, 1930)† 1.10
Markham (April 10, 1930)§ ..... .85
High Island (April 10, 1930)¶ ..... .95

*Humble Oil & Refining Co. †Gulf Pipe Line Co. ‡Sun Pipe Line Co. §The Texas Pipe Line Co. ¶Posted by Gulf Pipe Line Co. ‖Humble Oil & Refining Co. and Gulf Coast Pipe Line Co.

ROCKY MOUNTAIN STATES

Ohio Oil Co.-Midwest Refining Co.
(Effective April 11, 1930)

Iles (Feb. 15, 1930):
33 gravity and above .....$ .87

(Continued on Page 186)

CRUDE OIL GRAVITY TABLE

Gravity—	Okla.-Kans.	N. C. Texas, No. La., Arkansas	Crane, Upton, Ector, Crockett, Winkler, Pecos, Mitchell (West Texas); Lea, N. Mex.	Wheeler County (Texas Panhandle)	Gray County (Texas Panhandle)	Carson and Hutchinson (Texas Panhandle)	Salt Creek, Wyo.	Stephens, Ark.	Howard-Glasscock (West Texas)	Grade B Gulf Coast and Refugio, Texas
	1	2	3	4	5	6	7	8	9	10
Below 25	.75	.72	.65	.....	.....	.....	.....	....	.65	1.00
25 to 25.9	.80	.77	.68	.....	.....	.....	.....	....	.68	1.02
26 to 26.9	.85	.82	.71	.....	.....	.....	.....	....	.71	1.06
27 to 27.9	.90	.87	.74	.....	.....	.....	.....	.76	.74	1.09
28 to 28.9	.95	.92	.77	.....	.75½	.....	.....	.81	.76	1.12
29 to 29.9	1.00	.97	.80	.75½	.80½	.....	1.00	.86	.78	1.15
30 to 30.9	1.05	1.02	.83	.80½	.85½	.....	1.05	.91	.80	1.18
31 to 31.9	1.10	1.07	.86	.85½	.90½	.77½	1.10	.96	.82	1.21
32 to 32.9	1.15	1.12	.89	.90½	.95½	.82½	1.15	1.01	.84	1.24
33 to 33.9	1.18¼	1.17	.92	.95½	1.00½	.87½	1.18½	....	.86	1.27
34 to 34.9	1.22	1.22	.95	1.00½	1.05½	.92½	1.22	....	.88	1.30
35 to 35.9	1.25½	1.25½	.98	1.04	1.09	.96	1.25½	....	.90	1.33
36 to 36.9	1.29	1.29	1.01	1.07½	1.12½	.99½	1.29	....	.92	1.36
37 to 37.9	1.32½	1.32½	..	1.11	1.16	1.03	1.32½	....	....	1.39
38 to 38.9	1.36	1.36	..	1.14½	1.19½	1.06½	.....	....	....	1.42
39 to 39.9	1.39½	1.39½	..	1.18	1.23	1.10	.....	....	....	1.44
40 to 40.9	1.43	1.43	..	1.21½	1.26½	1.13½	.....	....	....	1.46
41 to 41.9	1.46½	1.46½	..	1.25	1.30	1.17	.....	....	....	1.48
42 to 42.9	1.50	1.50	..	1.28½	1.33½	1.20½	.....	....	....	1.50
43 to 43.9	1.53½	1.53½	..	1.32	1.37	1.24	.....	....	....	1.53
44 and above	1.57	1.57	..	1.35½	1.40½	1.27½	.....	....	....	1.54

Column 1, Note—Above prices posted April 10, 1930, by Carter Oil Co. (beginning at 25 degrees and below), and by the Prairie Oil & Gas Co. and other purchasers beginning at 24 degrees and below, the Magnolia Petroleum alone excepted. The Magnolia on April 10 posted the following prices: Below 26 gravity, 70 cents; 26-26.9, 76 cents; 27-27.9, 82 cents; 28-28.9, 88 cents; 29-29.9, 95 cents; 30-30.9, $1.02. From 31 up to and including 44 degrees and above Magnolia followed Carter price schedule, but made its whole schedule apply to its gravity purchases in Kansas, Oklahoma and North Central Texas alike.

Column 2—Humble Oil & Refining Co. posted above prices April 10, 1930, and was followed by all other companies in Texas except Magnolia which posted a different price schedule than Humble up to 33.9 degrees (see note in paragraph just above). The Texas Company posted North Louisiana and Arkansas on April 10, and Standard of Louisiana posted on April 11 followed by other companies, but Magnolia's price schedule begins with below 28 gravity at 87 cents. North Central Texas includes North Texas, Ranger, Mexia, Powell, Richland, Wortham, Lytton Springs, Currie, Nocona, Moran, and Corsicana light; Arkansas and Louisiana pools include Caddo, Bull Bayou, Crichton, Cotton Valley, above 36 gravity, DeSoto, Haynesville, Homer, El Dorado, and Rainbow.

Column 3—Posted by Humble Oil & Refining Co. April 10, 1930, and Magnolia Petroleum Co. April 10, 1930.

Columns 4, 5 and 6—Humble Oil & Refining Co., Prairie Oil & Gas Co., Magnolia Petroleum Co., April 10, 1930.

Column 7—Mid-West Refining Co., April 11. All crude over 37 gravity $1.32½.

Column 8—Louisiana Oil & Refining Co., April 11.

Column 10—Humble Oil & Refining Co., April 10. Magnolia Petroleum Co. posted below 25 gravity 65 cents with 3-cent differential upward to and including 36 and above, which was posted at $1.01.

CALIFORNIA CRUDE OIL PRICES

Standard Oil Co.-Union Oil Co. (Effective March 11, 1930)

Gravity—	Seal Beach, Salt Lake, Newport, Summerland, Lawndale, Los Angeles, Fullerton, Richfield, Torrance, Olinda-Brea, Alamitos Heights, Huntington Beach, Signal Hill, Inglewood	Whittier, La Habra, Coyote Hills	Midway-Sunset, Elk Hills, Lost Hills, Belridge, Buena Vista Hills	Montebello	Santa Fe Springs (Nov. 6)	Santa Maria, Coalinga	Wheeler Ridge, Fruitvale	Orcutt, Ventura, Rincon	Ventura Avenue (Nov. 6)	Elwood Terrace	Athens, Rosecrans, Dominguez
	1	2	3	4	5	6	7	8	9	10	11
14 to 14.9	.70	.70	.55	.70	....	.55	.55	.55	.70	....	....
15 to 15.9	.70	.70	.55	.70	....	.55	.55	.55	.70	....	....
16 to 16.9	.70	.70	.55	.70	....	.55	.55	.55	.70	....	....
17 to 17.9	.70	.70	.55	.70	....	.55	.55	.55	.70	....	....
18 to 18.9	.76	.76	.62	.71	....	.62	.62	.65	.76	....	....
19 to 19.9	.82	.82	.70	.77	....	.70	.70	.70	.82	....	....
20 to 20.9	.88	.87	.78	.83	....	.78	.78	.78	.88	....	....
21 to 21.9	.94	.93	.86	.90	.92	.86	.86	.90	.91	....	....
22 to 22.9	1.00	.98	.94	.97	.95	.94	.94	.95	.94	....	....
23 to 23.9	1.07	....	1.02	1.05	1.01	1.02	1.02	1.02	1.00	....	....
24 to 24.9	1.14	....	1.09	1.11	1.07	1.07	1.07	1.10	1.07	....	1.14
25 to 25.9	1.21	....	1.16	1.17	1.13	1.12	1.12	1.18	1.14	....	1.19
26 to 26.9	1.28	....	1.23	1.23	1.19	1.17	1.17	1.26	1.21	....	1.24
27 to 27.9	1.35	....	1.30	1.29	1.25	1.23	1.22	....	1.28	....	1.29
28 to 28.9	1.42	....	1.35	1.35	1.31	1.27	....	....	1.35	....	1.34
29 to 29.9	1.46	....	1.41	1.38	1.37	1.31	....	....	1.39	....	1.39
30 to 30.9	1.50	....	1.47	1.41	1.43	1.35	....	....	1.43	....	1.45
31 to 31.9	1.55	....	1.53	....	1.49	1.39	....	....	1.48	....	1.51
32 to 32.9	1.60	....	1.59	....	1.55	1.43	....	....	1.53	....	1.57
33 to 33.9	1.65	....	1.65	....	1.60	1.47	....	....	1.59	....	1.64
34 to 34.9	1.70	....	....	....	1.65	1.51	....	....	1.65	1.32	1.71
35 to 35.9	1.75	....	....	....	1.70	1.55	....	....	1.71	1.39	1.78
36 to 36.9	1.80	....	....	....	1.75	....	....	....	....	1.46	1.84
37 to 37.9	1.85	....	....	....	1.80	....	....	....	....	1.53	1.90
38 to 38.9	1.90	....	....	....	1.85	....	....	....	....	1.60	1.96
39 to 39.9	....	....	....	....	1.90	....	....	....	....	1.66	2.02
40 to 40.9	....	....	....	....	....	....	....	....	....	1.72	2.08
41 to 41.9	....	....	....	....	....	....	....	....	....	1.78	2.14
42 to 42.9	....	....	....	....	....	....	....	....	....	1.84	2.20

Kern River, Newhall-McKittrick, Mount Poso and Round Mountain 11 to 13.9 gravity, 50 cents; 14 gravity and above, 55 cents, effective March 11. On March 11, the Union Co. posted Midway-Sunset, Elk Hills, Buena Vista, Lost Hills and Coalinga crude as follows: 11 to 13.9 gravity at 50 cents.

Column 1—Signal Hill, Seal Beach, Huntington Beach and Alamitos Heights crude, 14 to 32.9 gravity, inclusive; Richfield, Olinda-Brea and Fullerton, 14 to 30.9 gravity; Torrance and Inglewood, 14 to 28.9 gravity.

Column 2—Whittier crude, 14 to 22.9 gravity; Coyote Hills, 14 to 30.9 gravity.

Column 3—Kern River, Newhall and McKittrick, 11 to 19.9 gravity; Midway-Sunset, Buena Vista and Elk Hills, 11 to 33.9 gravity; Lost Hills, 11 to 34.9 gravity; oil below 14 gravity posted at 50 cents.

Column 6—Oil below 14 gravity posted at 45 cents.

Columns 8 and 9—Posted by Union Oil Co. only.

Kettleman Hills, 55 gravity and above, $1.65 (posted by Standard Oil Co. of California).

TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns May 6

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

	Gasoline			Kero.
	Tank wagon	Service station	incl'ds tax of	tank wagon
Chicago†	18.0	19.0	3.0	13.0
Decatur, Ill.	18.2	19.2	3.0	13.1
E St. Louis	17.4	18.4	3.0	12.2
Joliet	18.4	19.4	3.0	13.3
Peoria	18.2	19.2	3.0	13.1
Quincy	18.2	19.2	3.0	12.9
Davenport, Ia.	18.5	19.5	3.0	13.3
Des Moines	18.5	19.5	3.0	13.3
Keokuk	18.5	19.5	3.0	13.3
Sioux City	18.1	19.1	3.0	12.9
Duluth, Minn.	19.6	20.6	3.0	13.9
Mankato	19.1	20.1	3.0	13.7
Minneapolis	19.2	20.2	3.0	13.9
LaCrosse, Wis.	18.2	19.2	2.0	14.0
Milwaukee	17.1	18.1	2.0	12.9
Madison	17.3	18.3	2.0	13.1
Detroit, Mich.	18.8	19.8	3.0	14.7
Grand Rapids	18.7	19.7	3.0	14.6
Saginaw	18.9	19.9	3.0	14.8
Evansville, Ind.	19.0	20.0	4.0	14.0
Fort Wayne	19.4	20.4	4.0	14.4
Indianapolis	19.2	20.2	4.0	14.2
South Bend	19.4	20.4	4.0	14.4
Fargo, N. D.	20.9	21.9	3.0	15.9
Huron, S. D.	20.3	21.3	4.0	14.7
Sioux Falls	19.1	20.1	4.0	14.4
K. C., Mo.*	17.9	18.9	3.0	11.6
Springfield*	17.8	18.8	3.0	12.5
St. Louis*	16.9	17.9	2.5	12.3
St. Joseph	17.5	18.5	2.0	12.2
Wichita, Kans.	16.8	15.8	3.0	11.8
Bartlesville, Ok.	17.5	18.5	4.0	11.5

*State tax 2 cents; remainder city tax.
†Effective February 20, discounts on Q.D.A. in Chicago district 3 cents off service station price on purchases of 500 gallons or more per month and 4 cents on purchases of 1,000 gallons or more per month.

The following quantity discounts from the service station price are allowed on monthly sales of gasoline; 2,000 gallons or less, 2 cents; more than 2,000 and less than 6,000 gallons, 2½ cents; more than 6,000 gallons, 3 cents; 100,000 gallons or more, 4½ cents. Discounts are allowed each month and they are not cumulative. Delivery tickets showing date and quantity delivered must be sent to the seller before the tenth of the month to secure the discount on the previous month's purchases.

NAPHTHA

	Tank wagon	Tank car
Oleum spirits	14.7	12.9
V. M. & P. Naphtha	16.7	13.9
Cleaner's naphtha	17.0	14.9
Stanisol	17.0	15.4

Tank wagon prices f.o.b. Chicago; tank car prices f.o.b. Whiting.

STANOLIND FURNACE OIL IN CHICAGO

Less than 100 gallons	9.0
100 to 349 gallons	8.0
350 gallons or more	7.5

Note—Outside Chicago furnace oil discount of 1 cent per gallon is given on deliveries of 100 to 349 gallons and 1½ cents on deliveries of 350 gallons or more.

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.

	Gasoline			Kero.
	Tank wagon	Service station	incl'ds tax of	tank wagon
Dallas, Tex.	16.0	20.0	4.0	12.0
Fort Worth	16.0	19.0	4.0	12.0
Houston	15.0	19.0	4.0	11.0
San Antonio	15.0	19.0	4.0	11.0
El Paso	16.0	20.0	4.0	12.0
Texarkana	16.0	16.0	4.0	12.0
Muskogee*	16.0	19.0	4.0	10.0
Okla. City*	16.0	19.0	4.0	10.0
Tulsa*	16.0	20.0	4.0	10.0
Ft. Smith, Ark.	14.0	15.0	5.0	12.0
Little Rock	18.0	19.0	5.0	13.0

*Gasoline tank wagon price to dealers 2 cents under posted tank wagon.

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline			Kero.
	Tank wagon	Service station	incl'ds tax of	tank wagon
Denver, Colo.	17.0	20.0	4.0	15.5
Pueblo	18.0	21.0	4.0	15.5
Grand Junction	23.0	26.0	4.0	19.0
Casper, Wyo.	19.0	22.0	4.0	14.0
Cheyenne	20.5	23.5	4.0	15.5
Butte, Mont.	24.5	27.5	5.0	20.0
Helena	24.5	27.5	5.0	20.0
Salt Lake, Utah	20.0	20.0	3.5	17.0
Albu'que, N. M.	21.0	24.0	5.0	17.0
Boise, Idaho	23.5	26.5	5.0	19.0
Twin Falls	23.5	27.5	5.0	19.0

PENNSYLVANIA—DELAWARE AND PART NEW ENGLAND

The Atlantic Refining Co.

	Gasoline			Kero.
	Tank wagon	Service station	incl'ds tax of	tank wagon
Pittsburgh, Pa.	15.0	*21.0	...	13.0
Philadelphia	15.0	*21.0	...	13.0
Scranton	15.0	*21.0	...	13.0
Allentown	15.0	*21.0	...	13.0
Altoona	15.0	*21.0	...	13.0
Erie	15.0	*19.0	...	13.0
Dover, Del.	18.0	20.0	3.0	13.0
Wilmington	18.0	20.0	3.0	13.0
Springf'd, Mass.	17.5	19.5	2.0	12.5
Worcester	17.3	19.3	2.0	12.3
Boston	16.5	18.5	2.0	11.5
Providence, R.I.	16.7	18.7	2.0	11.7
Hartford, Conn.	17.5	19.5	2.0	12.5
New Haven	17.6	19.6	2.0	12.6

*Includes tax of 4 cents. Pennsylvania tax is collected by the dealer and paid by him direct to the State. The Atlantic Refining Co. recognizes a 2-cent per gallon discount on gasoline from its posted tank wagon markets on sales to dealers for purposes of resale. The Atlantic Refining Co. also recognizes a maximum discount of 2 cents per gallon on gasoline to commercial accounts under contract for one year.

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline			Kero.
	Tank wagon	Service station	incl'ds tax of	tank wagon
Albany, N. Y.	17.6	19.6	2.0	15.6
New York*	16.3	18.3	2.0	14.3
Buffalo	17.8	19.8	2.0	14.8
Rochester	18.0	20.0	2.0	14.0
Syracuse	18.8	20.8	2.0	14.8
Boston, Mass.	16.5	18.5	2.0	13.5
Augusta, Me.	19.8	21.8	4.0	14.8
Manch't'r, N. H.	19.4	21.4	4.0	14.4
Burlington, Vt.	19.6	21.6	4.0	15.3

*Prices in steel barrels.

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline			Kero.
	Tank wagon	Service station	incl'ds tax of	tank wagon
Atlanta, Ga.	21.0	23.0	6.0	15.5
Augusta	20.0	22.0	6.0	15.5
Macon	20.0	22.0	6.0	14.0
Savannah	19.0	21.0	6.0	14.0
Birm'ham, Ala.	21.0	23.0	5.0	14.5
Mobile	18.0	18.0	4.0	13.5
Montgomery	21.0	23.0	4.0	15.5
Clarks'le, Miss.	19.0	21.0	5.0	12.5
Jackson	20.0	22.0	5.0	13.0
Natchez	19.5	21.5	5.0	13.0
Gulfport	21.0	23.5	5.0	13.0
Vicksburg	19.5	21.5	5.0	13.0
Jack'ville, Fla.	21.0	23.0	6.0	14.0
Miami	22.0	24.0	6.0	14.0
Pensacola	19.0	21.0	6.0	13.5
Tampa	21.0	23.0	5.0	13.0
Lexington, Ky.	19.0	20.0	5.0	14.5
Covington	20.0	21.0	5.0	14.5
Louisville	20.0	22.0	5.0	13.0
Ashland	20.0	21.0	5.0	15.0
Catlettsburg	20.0	21.0	5.0	15.0

In addition to the state tax of 4 cents on gasoline, Montgomery has city tax of 1 cent on gasoline and one-half cent on kerosene. Kerosene prices in Georgia include 1-cent tax. In Florida, an inspection fee of 0.125 cent; in Alabama, an inspection fee of one-half cent on kerosene and one-fourth cent on gasoline. To Pensacola, Birmingham and Mobile state taxes add 1-cent city levy. To Gulfport state tax add privilege tax of 2 cents.

Effective April 2, price to dealers 2 cents under posted tank wagon price.

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline			Kero.
	Tank wagon	Service station	incl'ds tax of	tank wagon
Atlantic City	16.5	18.5	2.0	13.5
Newark, N. J.	15.5	17.5	2.0	12.5
Annapolis, Md.	18.0	20.0	4.0	13.0
Baltimore	17.2	19.2	4.0	10.5
Cumberland	19.0	21.0	4.0	14.0
Washington	15.7	17.7	2.0	12.7
Danville, Va.	19.8	21.8	5.0	13.8
Norfolk	18.3	20.3	5.0	12.0
Petersburg	19.3	21.3	5.0	13.3
Roanoke	20.0	21.0	5.0	14.0
Richmond	18.7	20.7	5.0	12.7
Charles'n, W.Va.	18.5	20.5	4.0	12.5
Keyser	19.1	21.1	4.0	14.1
Parkersburg	17.2	19.2	4.0	11.2
Wheeling	18.4	20.4	4.0	12.4
Charlotte, N. C.	19.3	20.3	5.0	14.3
Hickory	20.8	22.8	5.0	14.8
Mt. Airy	20.5	22.5	5.0	14.5
Salisbury	20.7	20.0	5.0	14.7
Charleston, S. C.	19.3	21.3	6.0	12.3
Columbia	21.2	23.2	6.0	14.2

A 2-cent per gallon discount off the gasoline tank wagon price is offered to dealers.

PACIFIC COAST TERRITORY

Standard Oil Co. (California)

	Gasoline			Kero.
	Tank wagon	Service station	incl'ds tax of	tank wagon
San Francisco	22.0	23.0	3.0	15.5
Los Angeles	21.5	22.5	3.0	15.5
Reno, Nev.	27.0	28.0	4.0	19.0
Portland, Ore.	23.5	23.5	4.0	16.5
Seattle, Wash.	22.5	22.5	3.0	16.5
Tacoma	22.5	23.5	3.0	16.5
Spokane	26.5	26.5	3.0	20.5
Phoenix, Ariz.	18.0	22.0	4.0	20.0

Above prices are at company's plant or depots as company does not operate stations. A 6-cent per gallon discount is given dealers and customers taking tank wagon lots except in Phoenix where discount is 1 cent.

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline			Kero.
	Tank wagon	Service station	incl'ds tax of	tank wagon
Omaha	19 25	21.25	4.0	13 25
McCook	29.75	22.75	4.0	14.75
Norfolk	19 75	21.75	4.0	13.75
N. Platte	20.75	22.75	4.0	14.50
Scottsbluff	20.75	22.75	4.0	14.25

OHIO

Standard Oil Co. (Ohio)

	Gasoline			Kero.
	Tank wagon	Service station	incl'ds tax of	tank wagon
Ohio points*	19.0	20.0	4.0	†13.0

*Dealers and commercial accounts 2 cents under tank wagon.
†Service station price 15 cents.

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline			Kero.
	Tank wagon	Service station	incl'ds tax of	tank wagon
N. Orleans, La.*	16 0	16.0	5.0	12 0
Baton Rouge	16.0	17.0	4.0	14.0
Alexandria	17.0	17.0	4.0	14.0
Lafayette*	18.0	20.0	5.0	14.0
Lake Charles*	16.0	16.0	5.0	14.0
Shreveport	14.0	18.0	4.0	14.0
Knox'le, Tenn.	20.0	22 0	5.0	16 0
Memphis	18.0	20.0	5.0	12 5
Chattanooga	20 0	22.0	5.0	16 0
Nashville	19.0	21.0	5.0	16.0
Bristol	20 0	22 0	5.0	14 0
Lt. Rock, Ark.	18 0	19.0	5.0	13.0

*Includes city tax of 1 cent. Louisiana kerosene prices include 1-cent state tax. New Orleans kerosene price also includes 1-cent city tax.

TANK WAGON CHANGES

Standard Oil Co. of Kentucky advanced the gasoline tank wagon and station prices 1 cent in Georgia, Florida and Kentucky April 22.

Magnolia Petroleum Co. reduced the gasoline station price 2 cents in Fort Smith, Ark., April 24 to 15 cents.

Standard Oil Co. of Louisiana advanced the gasoline station price 1 cent in Shreveport, La., April 29 to 18 cents.

Atlantic Refining Co. advanced the gasoline tank wagon and station price 2 cents throughout Massachusetts, Rhode Island and Connecticut April 30.

Magnolia Petroleum Co. advanced the gasoline tank wagon and station prices 2 cents in Texarkana, April 28 to 16 cents each. On April 30 it reduced the gasoline tank wagon price 1 cent in Fort Smith, Ark., to 14 cents.

GAS LINE IN VENEZUELA

MARACAIBO, Venezuela, May 1.—A high pressure 6-inch all welded gas line, made of heavy drill pipe, has been completed for the Lago Petroleum Corp. It extends from the Ambrosio Field to the La Salina tank farm, a distance of about 5 kilometers (about 3⅛ miles), and will serve as the trunk line of a gas-gathering system for the Ambrosio Field.

VANCOUVER GAS PROJECT

CHATHAM, Ontario, May 5.—Electric Power & Light Corp. of Vancouver, British Columbia, is reported investigating a project to pipe Turner Valley gas to Vancouver, as well as an alternative project to compress the gas and ship to various markets in liquid form.

CRUDE OIL PRICES

(Continued from Page 185)

Under 33 gravity	.85
Dutton Creek (Feb. 15, 1930)	1.25
Rock Creek, Wyo.	1.35
Salt Creek	See gravity table
Big Muddy	1.38
Grass Creek, heavy (July 27, 1928)	.90
Grass Creek, light	1.55
Mule Creek (May 21, 1929)	1.20
Elk Basin	1.55
Lance Creek	1.63
Poison Spider (March 14, 1927)	1.00
Notches (March 14, 1927)	.65
Rex Lake (February 22)	1.10
Osage	1.83
Lost Soldier (contract, May 22)	1.05
Hamilton Dome (March 14, 1927)	.85
Greybull (Feb. 15, 1930)	1.46
Four Bear (May 21, 1929)	.85
Cat Creek	1.55
Pondera (Montana) (Feb. 15, 1930)	1.80
Sunburst (Montana) (Feb. 15, 1930)	1.65
Torchlight (May 21, 1929)	1.65
Hogback (Feb. 15, 1930)	1.40
Artesia (New Mexico)	1.05
Lea County	See gravity table

Note—Salt Creek, Osage, Cat Creek, Greybull and Hogback posted by Midwest Refining Co., and the remainder by the Ohio Oil Co. Both companies posted Grass Creek light and Elk Basin.

SOUTH CENTRAL AND SOUTHWEST TEXAS

Darst Creek (April 10, 1930)*	$1.15
Luling (April 10, 1930)	.85
Mirando (April 10, 1930)†	.85
Pettus (April 10, 1930)§	1.40
Salt Flat (April 10, 1930)§	1.15
Thrall‡	...
Lytton Springs (Lockhart) See gravity table	
Somerset (April 10, 1930):	
Below 33 gravity	$1.15
33 to 33.9 gravity	1.17
34 to 34.9 gravity	1.19
35 to 35.9 gravity	1.21
36 to 36.9 gravity	1.23
37 to 37.9 gravity	1.25
38 gravity and above	1.27

*Posted by Humble Oil & Refining Co. and Magnolia Petroleum Co. †Magnolia Petroleum Co., Humble Oil & Refining Co., Crown Central Pipe Line Co. ‡Thrall prices same as North Central Texas less 19½ cents per cwt. freight. §Humble Oil & Refining Co.

EASTERN STATES

Joseph Seep Purchasing Agency
(Effective May 1, 1930)

Penna Grade Oil in New York Transit Lines (New York)	$2.50
Bradford District Oil in National Transit Lines (Pennsylvania)	2.50
Penna Grade Oil in National Transit Lines (Pennsylvania)	2.55
Penna Grade Oil in Southwest Pennsylvania Lines (West Virginia)	2.50
Penna Grade Oil in Eureka Pipe Line Lines (Pennsylvania)	2.40
Penna Grade Oil in Buckeye Pipe Line Lines (Ohio)	2.20
Cabell Grade Oil in Eureka Pipe Line Lines (West Virginia) (May 22,1929)	1.75
Corning 35-cent Grade Oil in Buckeye Pipe Line Co.'s Lines (Feb. 17, 1930)	1.75
Somerset Oil in Eureka Pipe Line Lines (Kentucky) (April 11, 1930)	1.31
Somerset Oil in Cumberland Pipe Line Lines (Kentucky) (April 11, 1930)	1.47
Ragland Grade Oil in Cumberland Pipe Line Lines (Kentucky) (Jan. 29)	.60
Wayne District Oil in Cumberland Pipe Lines (April 11, 1930)	1.34

MIDDLE WESTERN STATES

Ohio Oil Co.
(Effective April 11, 1930)

Lima	$1.70
Wooster	1.80
Illinois	1.65
Indiana	1.47
Princeton	1.65
Plymouth	1.22
Waterloo (Nov. 17, 1926)	1.36
Western Kentucky	1.57
Dundee, Mich. (April 16)‖	
.....Same as Mid-Continent gravity scale	
Upper and Lower Traverse sands, Mich. (April 16)‖	
.....Same as Mid-Continent gravity scale	
Saginaw, Mich. (April 11)†	
.....Same as Mid-Continent gravity scale	
Cumberland, Clay, Barren, Clinton and Monroe Counties, Kentucky (March 15)‡	1.50
Oil in line in Stoll Oil Refinery Co. in Oil City, Ky. (April 15)§	1.45
Oil Springs (Canada) (April 11, 1930)¶	2.17
Petrolia (Canada) (April 11, 1930)¶	2.10

*Posted by Pure Oil Co. †Posted by Sun Oil Co. ‡Posted by Paragon Development Co. §Posted by Stoll Oil Refining Co. ¶Posted by Imperial Oil Co., Ltd. ‖Posted by Standard of Indiana for boat shipment. Local refiners posted Mid-Continent prices on April 11.

MEXICAN CRUDE

Panuco*	$ .87

*Based on February transactions.

Here, motorists don't just "buy gas" ...they *Select* their motor-fuel... they get THREE-GAS SERVICE!

Keeping pace with motoring developments, Sinclair offers three different gasolines that give three different engine performances. Every motorist can select the gasoline that's just right for his own engine and his own driving habits!

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And for those who prefer to pay three cents less per gallon, here's Sinclair Regular Gasoline, full of eager power—great for economy and mileage...The quality gasoline at a popular price!...Try the progressive way to sell gasoline. Sinclair Three-Gas Service...the sure way to increase your volume.

SINCLAIR REFINING COMPANY, INC.,
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Atlanta *Chicago* *Houston* *Kansas City*

Improved Conditions Seen by Van Eck

President of Shell Union Oil Corp. Commends Conservation Practices in Report to Stockholders

By A. E. Mockler

NEW YORK, May 5.—Co-operative action within the oil industry on a national scale is bringing about improved conditions, says J. C. Van Eck, president of Shell Union Oil Corp., in his annual report to stockholders. "It is now generally recognized that the oil industry can no longer be localized in any particular country," he says in part, "and that conditions existing in one country are bound to react on conditions all over the world. In itself this represents a measure of progress, as it will undoubtedly lead to a better understanding of the interrelationship and interdependence of the various countries regarding crude oil production."

Shell Union's subsidiaries have obtained valuable holdings in the Kettleman Hills Field in California, Mr. Van Eck's report states, one well having already been drilled into the producing sand by a subsidiary, but shut down in conformity with the restriction agreement by operators in that field.

Crude output in 1929 by Shell Oil Co., Shell Petroleum Corp., and Wolverine Petroleum Corp. aggregated 54,416,744 bbls. gross, or 46,790,887 bbls. net, including the share of production of Comar Oil Co.

The report states that early in 1929 Shell acquired the assets and business of the New Orleans Refining Co., including a 50,000-bbl. refinery at Norco on the Mississippi River, approximately 26 miles north of New Orleans. The company also during the year completed its 20,000-bbl. capacity refinery at Houston. Additions and new installations were made during the year to absorption plants and a vapor-phase cracking plant is now in course of construction at the Wood River, Ill., refinery.

At the close of 1929, daily crude and pressure distillate intake capacity of Shell's American refineries was 290,000 bbls., against 240,000 bbls. daily at the close of 1928. Intake of all Shell refineries in this country last year was 75,476,047 bbls. of crude oil, against 60,209,057 bbls. in 1928.

Output of casinghead gasoline by Shell in this country during the past year was 179,980,099 gallons, compared with 160,096,991 gallons in the previous year.

Swan-Finch Oil

E. V. Moncrieff, son of the late William G. Moncrieff, has been elected president of the Swan-Finch Oil Corp., succeeding his father, who died recently while on a vacation trip to California. H. F. Moncrieff, another son of the late William G. Moncrieff, was elected senior vice president, succeeding E. V. Moncrieff. D. J. Kenefick was elected to the board. Other retiring directors and officers were re-elected. Officers and directors of the Swan-Finch Oil Corp. will also serve in the same capacity for the Swan-Finch Refining Co.

Standard of California

At the regular annual meeting of the stockholders of the Standard Oil Co. of California the board of directors and officers were re-elected as follows: K. R. Kingsbury, president; R. J. Hanna, H. T. Harper, W. H. Berg and Oscar Sutro, vice presidents; R. C. Warner, treasurer; H. M. Storey, H. D. Collier, R. W. Hanna and M. E. Lombardi, directors. The regular dividend of 62½ cents a share was declared payable on June 16, 1930, to all stockholders of record at the close of business on May 15, 1930.

Valvoline Oil

The financial structure of Valvoline Oil Co., recently acquired by Paragon Refining Co., will be completely revamped, with plans for permanent financing to be arranged at a special meeting of Paragon stockholders this week (May 6). Paragon in September, 1929, obtained control of the Valvoline company, one of the oldest refiners and marketers of Pennsylvania lubricating oil, through purchase of 32,227 shares of the 38,600 shares of Valvoline common stock then outstanding.

Louisiana Refining

Louisiana Oil Refining Corp. and subsidiaries report for quarter ended March 31, 1930, net loss of $63,798 after interest, depreciation, depletion, amortization, etc., comparing with profit of $239,035 before Federal taxes in first quarter of 1929. Stockholders of record May 9 have been offered the right to subscribe to one

TRANSACTIONS IN OIL SHARES ON NEW YORK STOCK EXCHANGE

Quotations Compiled by Francis, Bro. & Co., Members of the New York Stock Exchange and Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.

1930 High	1930 Low	Week ended April 30 Sales	Week ended April 30 High	Week ended April 30 Low	Week ended April 30 Close	Stocks—		Outstanding capital	Par value	Div. rate	Last paid	1927 High	1927 Low	1928 High	1928 Low	1929 High	1929 Low
29¾	18	8,300	28¾	27½	28¼	Amerada Corp.	(sh)	922,075	N.P.	50cQ	1-31-30	37⅝	27⅝	43⅞	27⅛	42⅝	17½
37	20½	800	31⅞	30	30	American Republic Corp.	(sh)	209,180	N.P.	.....	3-20-29	82½	35⅞	85	51⅜	64¾	12½
50¼	32½	10	48	48	48	Associated Oil		$57,260,300	$25	50cQ	12-31-29	50¼	35	53⅜	37½	47¼	34½
51⅜	36¼	9,400	45⅞	44⅜	45	Atlantic Refining		$66,763,775	$25	25cQ	12-16-29	131⅜	104	66⅜	50	77⅞	30
34	20½	9,000	30⅞	30	30	Barnsdall Corp.		$56,546,600	$25	50cQ	12-7-29	35½	20¾	53	20	49⅛	20
30½	19½	9,800	29⅜	28½	28¾	Continental Oil of Delaware	(sh)	4,741,554	N.P.	.....	3-31-27	..	..	..	..	47⅛	18
71⅛	49⅛	3,300	62⅛	60¼	60⅝	General Asphalt	(sh)	413,333	N.P.	50cQ	.....	96¾	65	94⅞	68	94¾	42¼
116⅞	52¼	10,900	111⅞	108	109	Houston Oil		$24,968,600	$100	.....	.....	175¾	60⅛	167	79	109	26
32	20¼	1,500	27⅞	27⅛	27⅝	Independent Oil & Gas	(sh)	1,362,295	N.P.	50cQ	1-31-30	32¾	17⅝	38⅜	21¾	39⅜	17¾
28⅜	17¾	7,500	22⅜	21½	21⅝	Indian Refining		$12,565,070	$10	.....	5-31-24	12⅛	7⅝	39⅝	9	53	13⅛
26½	21¼	1,000	25	24½	24⅞	Lago Oil & Transport	(sh)	3,992,122	N.P.	.....	5- 1-27	37¾	20½	39⅛	27⅜	38⅜	16½
12	8	1,000	11¼	10½	10½	Louisiana Oil Refining	(sh)	1,190,063	N.P.	.....	.....	18⅛	10	19¾	9⅜	18	7
10⅜	5⅛	200	9	9	9	Maracaibo Oil	(sh)	330,000	N.P.	.....	.....	22¾	12	25½	12½	18½	5⅛
37	16⅛	16,800	35½	34¼	34¼	Mexican Seaboard	(sh)	1,244,383	N.P.	.....	12-15-20	9¼	3	72	4⅝	69⅜	9¼
33	23½	9,300	32½	31½	31¾	Mid-Continent Petroleum	(sh)	1,857,912	N.P.	50cQ	12-15-29	39⅜	25½	44½	25⅛	39⅞	22⅛
2½	⅞	800	1⅞	1¾	1¾	Middle States, ctfs.		$23,736,130	$10	.....	7- 1-23	3¾	1⅝	7⅜	2⅜	5⅛	¾
60¼	51⅝	1,700	60	59	60	Pan American P. & T.		$50,084,700	$50	.....	10-20-27	65⅞	40¼	54⅞	38¼	69	40½
63¾	50½	6,600	63¾	62¼	63	Pan American P. & T. "B"		$121,110,650	$50	.....	11-15-24	66⅜	40¼	58⅞	37¾	69¼	40½
		No sales.				Pan American Western B		$400,000	N.P.	.....	1-30-27	37⅞	16¾	28⅜	15½	18½	13⅝
11⅞	4¼	1,800	10¾	10⅛	10¾	Panhandle P. & R.	(sh)	199,370	N.P.	.....	.....	18⅞	8	21¾	11½	15¼	3
60	47½	100	60	60	60	Panhandle P. & R. pfd.		$2,564,400	$100	.....	7- 2-23	83	54	108	70	76	47½
44¾	29⅛	88,000	44¾	43½	44¼	Phillips Petroleum	(sh)	2,593,075	N.P.	50cQ	1- 2-30	60¼	36¼	53⅞	35¼	47	24¼
2½	1	1,000	2¼	2⅛	2⅛	Pierce Oil Corp.		$29,622,831	$25	.....	.....	1⅛	½	5¼	½	3⅜	1
7⅛	2¼	8,100	6⅜	6¼	6⅝	Pierce Petroleum	(sh)	2,500,000	N.P.	.....	.....	5½	2½	7	3½	5⅞	½
54	45	800	49½	48⅝	48⅝	Prairie Oil & Gas		$60,848,000	$25	50cQ*	12-31-29	55½	45⅝	68	46	65⅝	40½
60	54⅛	300	54½	54½	54½	Prairie Pipe Line		$101,250,000	$25	75cQ†	12-31-29	190	130¾	280	172	65	45
11⅞	6½	400	10	10	10	Producers & Refiners		$37,438,950	$50	.....	9-15-23	33⅞	16¾	29⅞	16	25⅞	4
40	31	160	34	34	34	Producers & Refiners pfd.		$2,845,350	$50	.....	5- 1-25	50	36⅞	49⅝	41	46¾	25½
27¼	21⅛	1,700	25½	25¼	25¼	Pure Oil		$75,959,250	$25	37½cQ	12- 2-29	33½	25	31⅝	19	30¾	20
28¼	22¼	2,300	25¾	25	25⅜	Richfield Oil		$52,410,875	$25	50cQ	11-15-29	28⅝	25⅜	56	23	49⅝	20
25¾	16½	900	23	22¾	23	Rio Grande Oil	(sh)	1,236,270	N.P.	$2A	7-25-29	..	..	37½	32	42½	15
56½	49¼	7,400	55⅜	54⅜	55	Royal Dutch, N. Y.	(sh)	611,303	$1.873	.....	9-13-29	54½	44¼	64	44⅝	64	43⅛
48⅜	42⅜	100	48⅜	48¼	48⅜	Shell Transport & Trading Co.		£23,985,000	£1	$1.45	7-23-29	48⅝	40½	47⅞	41⅜	57½	40⅝
25½	21	4,600	24½	23⅞	23⅞	Shell Union Oil	(sh)	13,066,497	N.P.	35cQ	12-31-29	31¾	23⅝	39¼	23¼	31¾	19
37	22⅞	1,500	34¼	33⅛	33¼	Simms Petroleum		$8,353,620	$10	40cQ	12-14-29	25⅜	14¼	27¼	18⅛	40⅛	15
32	21⅝	12,700	30⅜	29⅝	29⅝	Sinclair Consolidated	(sh)	5,500,000	N.P.	50cQ	1-15-30	22⅜	15	46¾	17⅜	45	21
112¼	109	200	111¾	111¾	111¾	Sinclair Consolidated pfd.		$16,025,250	$100	$2Q	11-15-29	104½	97	110	102½	111	103
42	28⅞	2,900	39⅜	38½	39	Skelly Oil		$27,441,250	$25	50cQ	12-16-29	37⅜	24⅛	42⅝	25	40½	28
75	55½	21,600	74⅜	73⅝	74⅛	Standard Oil of California	(sh)	12,594,098	N.P.	62½cQ	2-15-30	60¾	50⅜	80	63	81⅞	51½
49	37¼	4,100	47⅜	46½	47½	Standard Oil of Kansas		$8,000,000	$25	50cQ	12-16-29	20⅞	14⅝	37⅜	15	33¾	18
84⅞	58	270,400	84⅞	83¼	83½	Standard Oil of New Jersey		$634,999,200	$25	25cQ*	12-16-29	41⅜	35⅛	59⅜	37¾	83	49
40⅜	31¼	68,800	40⅜	39¼	39¾	Standard Oil of New York		$445,223,675	$25	40cQ	12-16-29	34⅛	29¾	44¼	28¾	48⅛	31¾
70	53	400	67⅜	66	66	Sun Oil	(sh)	1,416,869	N.P.	25cQ	12-16-29	34⅞	30	77	31½	86⅜	55
8⅝	5¼	700	7½	7⅜	7½	Superior Oil Corp.	(sh)	776,979	N.P.	.....	12-20-20	..	..	..	..	24	5¼
59⅜	50⅞	14,200	59	57¼	58¼	The Texas Corporation		$246,204,900	$25	75cQ	1- 1-30	58	45	74¾	50	71⅞	50
14½	8⅞	1,400	12½	12	12⅛	Texas Pacific Coal & Oil Co.		$9,304,890	$10	2½%A‡	12-31-29	18⅞	12	26⅝	12⅛	23⅞	9½
31	19	100	31	31	31	Tide Water Oil	(sh)	2,191,759	N.P.	20cQ	12-31-29	29⅛	19	41½	19⅝	40	14
94⅞	86⅛	300	93¾	93⅛	93¾	Tide Water 5½% pfd.		$19,947,000	$100	$1.25Q	11-15-29	90⅛	85	100⅛	86	97½	85⅛
17¾	10¾	12,700	17⅜	16⅝	17	Tide Water Associated	(sh)	5,560,424	N.P.	30cS	2-15-30	19⅛	15¾	25	14¾	23½	10
89¾	78	700	87½	87⅜	87½	Tide Water Associated pfd.		$73,284,500	....	$1.50Q	2- 2-30	..	..	..	..	90⅞	74⅛
24	16¼	23,700	23⅜	22⅛	22½	Transcontinental Oil	(sh)	3,742,029	N.P.	.....	.....	10⅜	3¾	14¾	7¼	15¼	5⅛
50	41¾	1,200	47½	47	47¼	Union Oil of California		$104,342,375	$25	50cQ	11- 9-29	56½	39⅝	58	42⅜	57	42⅛
38½	33	100	35	35	35	Union Tank Car	(sh)	1,254,048	$100	$1.25Q	12- 2-29	127½	94	128⅛	110	163¾	121⅞
27	16⅝	4,000	21¼	20½	20⅝	Warner-Quinlan	(sh)	632,948	N.P.	50cQ	1- 2-30	34½	24½	44⅞	26	42⅞	15
		No sales.				White Eagle Oil & Refining	(sh)	505,100	N.P.	50cQ	1-20-30	27½	20	38	20⅛	38	25
20¾	11½	200	19⅛	19⅛	19⅛	Wilcox Oil & Gas	(sh)	428,907	N.P.	.....	5-10-28	..	..	..	..	29¾	12⅞

*Plus extra dividend of 25 cents. †Plus extra dividend of 50 cents. ‡Payable in stock.

In comparing highs and lows for the several years in the three tables it will be necessary to take into consideration cases where there have been splits in the stock.

share at $11 a share for each ten shares held. Rights expire May 29. New York Stock Exchange committee on securities has ruled that transactions in common stock of Louisiana Oil Refining Corp. on May 9, unless made specifically for cash, shall be ex-rights. Rights may be dealt in on a when issued basis on and after May 9. Transactions in rights must be settled May 20, after which date dealings in rights will be as in stock. Trading in rights will cease at the close of business May 28.

Colonial Beacon

Report of Colonial Beacon Oil Co., formerly Beacon Oil Co. (controlled by Standard Oil Co. of New Jersey), for quarter ended March 31, 1930, shows net loss of $856,861 after interest, depreciation, etc., comparing with profit of $140,477 after interest, depreciation, etc., but before Federal taxes in first quarter of 1929.

Deep Rock Oil

For year ended December 31, 1929, Deep Rock Oil Corp. (formerly Shaffer Oil & Refining Co.) reports profit after taxes, interest, depletion and depreciation of $1,373,052 available for amortization dividends and surplus, comparing with $1,415,596 in 1928.

Skelly Oil

A special meeting of the stockholders of Skelly Oil Co. of record May 2 will be held at the offices of the company, Tulsa, May 14, to vote on increasing the total number of shares of stock to 1,520,000 from 1,400,000, of which 120,000 shares of $100 par value each shall be preferred stock. Skelly Oil Co. and subsidiaries report for quarter ended March 31, 1930, net profit of $547,510 after depreciation, depletion, interest and Federal taxes, equivalent to 50 cents a share (par $25) on 1,095,581 shares of stock. This compares with $1,170,208 or $1.07 a share on 1,089,510 shares in first quarter of 1929.

New York Standard

Standard Oil Co. of New York declared the regular quarterly dividend of 40 cents, payable June 16 to stock of record May 9.

New Jersey Standard

Standard Oil Co. of New Jersey declared the usual extra dividend of 25 cents and the regular quarterly dividend of 25 cents, both payable June 16 to stock of record May 17.

Simms Petroleum

Simms Petroleum Co. declared the regular quarterly dividend of 40 cents, payable June 14 to stock of record May 29.

Allegheny Gas

H. G. Scott, president of Union Management & Engineering Corp. and president of Memphis Natural Gas Co. and Appalachian Gas Corp. has been elected a director of Allegheny Gas Corp.

Panhandle P. & R.

Panhandle Producing & Refining Co. and subsidiaries report for quarter ended March 31, 1930, net profit of $37,225 after taxes, depreciation, depletion, amortization, intangible development costs, in-

(Continued on Page 190)

INDEPENDENT OILS ON NEW YORK CURB

Quotations Compiled by Francis, Bro. & Co., Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.

1930 High	1930 Low	Week ended April 30 Sales	High	Low	Close	Stocks—		Outstanding capital	Par value	Div. rate	Last paid	1927 High	1927 Low	1928 High	1928 Low	1929 High	1929 Low
⅜	⅛	12,600	¼	3/16	¼	Amer. Con. Oilfields		$11,018,000	$5	.....	.....	2 1/16	.55	1½	.53	72c	⅛
4¼	1½	35,700	4¼	3⅞	4¼	Amer. Maracaibo	(sh)	700,000	N.P.	.....	.....	7½	2¾	9½	3⅛	8⅝	1⅛
1⅜	1	100	1	1	1	Argo Oil	(sh)	683,971	$10	.....	.....	2¾	1	4½	2¼	5	1½
21	20½	200	21	20½	21	British American (new, C.W.I.)		$1,311,321	N.P.	25cQ*	1- 2-30	40	20½	55	32¾	62	7⅞
2⅜	¾	1,600	2¼	2	2⅛	Carib. Syndicate		$131,250	25c	.....	.....	28¼	15½	4½	3⅞	4⅞	1
44¼	26½	28,500	42	41¼	41⅞	Cities Service	(sh)	24,290,359	N.P.	30cA†	1- 2-30	58¾	40¼	90⅞	54	68⅛	20
93⅞	88	400	93¾	92½	92¾	Cities Service pfd.	(sh)	1,500,000	N.P.	50cM	1- 2-30	95⅜	87	103½	94½	98¾	84
¾	¼	6,200	⅝	3/16	⅝	Columbia Syndicate		$2,000,000	$1	.....	.....	3⅞	1⅛	3¼	.76	2	½
5⅞	3⅞	100	4	4	4	Cons. Royalty		$5,000,000	$10	15cQ	10-25-29	9¾	6⅜	8⅞	6¼	11¼	2½
7½	5⅜	3,300	6⅞	6⅝	6⅝	Creole Petroleum	(sh)	5,977,873	N.P.	.....	.....	14⅞	9½	17½	9½	11¾	5⅝
1	¼	300	⅝	⅝	⅝	Crown Central	(sh)	578,000	N.P.	.....	.....	3	.50	3¼	.76	2½	¼
12⅞	7¼	300	11⅜	11⅜	11⅜	Darby Petroleum	(sh)	1,019,392	N.P.	25cQ	1-15-30	12	4	33½	3¼	26	6½
11	4½	300	8½	8½	8½	Derby Oil & Refining	(sh)	500,000	N.P.	.....	.....	2½	74	2¼	1	11	2
60	35	100	57	57	57	Derby Oil & Refining pfd		$48,500	N.P.	.....	.....	16¾	4	21⅛	7½	44	20¾
166¼	131¼	7,600	166¼	161⅝	166¼	Gulf Oil Corp.	(sh)	4,504,921	$25	37½cQ	1- 1-30	118	86¼	165	101⅛	209	115
1⅜	¾	2,900	1⅝	1⅜	1½	Intercontinental Pet.		$5,682,000	$5	.....	.....	2½	.80	3⅜	1	2⅞	⅜
3	1⅞	300	2⅜	2⅜	2⅜	Kirby Petroleum	(sh)	750,000	N.P.	.....	.....	2¼	1⅛	3	1¼	3⅝	1¼
4⅜	1⅛	2,200	4¼	3⅝	3¾	Leonard Oil & Dev.		$50,000,000	$25	.....	.....	10⅞	5⅛	9⅜	5⅛	6⅛	1
29	18⅝	200	28	27	28	Lion Oil & Refining	(sh)	250,000	N.P.	50Q	1-31-30	27½	20	43⅞	20	38⅞	18
55⅞	34⅛	1,100	52½	52	52	Lone Star Gas	(sh)	5,000,000	N.P.	20cQ	12-31-29	59⅜	37	69¼	48½	67⅞	28
½	¼	1,500	½	⅜	⅜	Magdalena Syndicate	(sh)	850,000	$1	.....	.....	2⅞	.80	1⅞	.50	1¼	¼
16	12	100	15⅛	15⅛	15⅛	Margay Oils		$160,000	N.P.	50cQ	1-10-30	52	12	48½	32	38½	14
7½	2	300	4½	4⅛	4⅛	Mexico-Ohio Oil		.....	....	....	.....	12⅛	5	8	2¾	6⅝	2½
¾	½	300	⅝	⅝	⅝	Mountain & Gulf		$4,000,000	$1	2cQ	1-15-30	1½	1	1¾	.76	1½	¼
12⅛	8	800	11½	11	11	Mountain Producers		$1,682,182	$10	40cQ	1- 2-30	29¼	22¾	28⅞	19½	22⅞	7
3½	2½	200	2⅞	2⅞	2⅞	New Bradford Oil		$1,095,291	$5	12½cQ	1-15-30	5⅞	4⅝	5⅝	4¼	5	2¼
7¼	3½	1,800	5⅝	5	5	New Mex. & Arizona		$1,000,000	$1	.....	.....	16	9¼	11⅞	7⅛	9⅜	2¼
11¼	6⅞	400	10	10	10	North Central Texas	(sh)	400,000	N.P.	15cQ	12- 2-29	12¾	9½	14¼	8½	18½	6⅛
2½	1	600	1¾	1⅝	1¾	Pandem	(sh)	489,875	N.P.	.....	.....	9⅜	3¼	6	2⅛	3½	½
4⅝	1⅞	300	3⅜	3⅛	3⅜	Pantapec Oil	(sh)	1,506,000	N.P.	.....	.....	12⅛	7	15⅝	8½	10¼	1⅞
		No sales.				Pennok Oil		$150,000	N.P.	.....	.....	13½	5⅛	7¾	4⅞	7¾	4⅜
10	9	500	9⅛	9⅛	9⅛	Red Bank Oil	(sh)	250,000	N.P.	.....	.....	24⅜	7	18	4⅞	16	9⅝
5⅜	2⅛	2,100	4½	4¼	4¼	Reiter-Foster	(sh)	388,584	N.P.	10cQ	12- 9-29	15½	3½	12⅞	4⅛	8½	1⅛
7	3⅝	400	6	6	6	Ryan Consolidated	(sh)	500,000	N.P.	.....	.....	7	4½	12	4⅜	11	3
2½	2	200	2	2	2	Salt Creek Consolidated	(sh)	1,286,300	$10	10cQ	1- 2-30	8	5¼	7¼	5½	5⅞	1⅞
15¼	10	200	13⅞	13⅛	13⅞	Salt Creek Producers	(sh)	1,496,859	$10	50cQ	2- 1-30	35½	27¼	35	23⅛	25⅞	9
1	½	100	¾	¾	¾	Savoy Oil		$750,000	$5	.....	.....	7	1¼	3½	1	2½	3/16
		No sales.				Transcontinental pfd.		.....	....	....	.....	..	..	..	..	..	..
4½	2¼	100	3½	3½	3½	Venezuelan Petroleum	(sh)	755,090	$5	5cQ	11-15-29	7⅜	4¼	9⅛	4¾	6½	1⅝
4⅜	2	300	3⅞	3⅞	3⅞	Woodley Petroleum		$500,000	$1	.....	.....	7	4⅜	8¼	4⅞	9½	2
2½	½	700	1⅞	1⅞	1⅞	Y Oil & Gas (new)		$100,000	N.P.	.....	.....	6	1⅜	8⅜	2⅛	2⅞	¼

*Including one-half per cent monthly in stock. †Payable monthly and a monthly stock dividend of one-half per cent

STANDARD OIL STOCKS ON NEW YORK CURB

Quotations Compiled by Francis, Bro. & Co., Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.

1930 High	1930 Low	Week ended April 30 Sales	High	Low	Close	Stocks—	Outstanding capital	Par value	Div. rate	Last paid	1927 High	1927 Low	1928 High	1928 Low	1929 High	1929 Low
18¼	12¼	200	18	18	18	Anglo-American Oil (vot. C.O.D.)	£4,192,635	£1	.36⅞	11-27-29	21⅝	17⅞	22⅜	14⅞	17	11
1	½	100	¾	¾	¾	Atlantic Lobos	.....	....	.....	.....	..	..	..	..	..	..
25	23	100	24¾	24¾	24¾	Borne Scrymser	$1,000,000	$25	$1SA	10-15-29	69	50	56½	44½	46½	25
69	57	200	59	58	59	Buckeye Pipe Line	$10,000,000	$50	$1Q	12-14-29	60	45	76	53	74¼	55
184⅞	155	200	170¼	170¼	170¼	Chesebrough Mfg.	$3,000,000	$25	$1Q*	12-30-29	126	76½	161	117	210	130
17⅜	12⅛	200	15	15	15	Continental Oil	$36,057,840	$10	.....	12-15-27	22⅝	16¼	23	16	29	10
65⅜	40½	150	62¼	62¼	62¼	Cumberland Pipe Line	$1,500,000	$50	$1Q	12-15-29	137	89	114	67	75¾	40
54¾	43	100	43¼	43	43¼	Eureka Pipe Line	$5,000,000	$100	$1Q	11- 1-29	68½	47	88	64½	70½	42
5¼	2½	500	5	5	5	Galena Signal Oil, ctfs. of dep.	$16,000,000	$100	.....	.....	13½	3½	13	4¼	6½	3
119	78	2,500	116	114	114	Humble Oil & Refining	$74,103,300	$25	50cQ	1 1-30	68½	54	114¾	59¼	128	74⅛
311	305	100	308	308	308	Illinois Pipe Line	$20,000,000	$100	$10SA	12-16-29	182	123¾	290½	176½	340½	260
30	22⅛	3,800	27	26¾	26¾	Imperial Oil Co., Ltd.	$26,421,768	N.P.	12½cQ	12- 2-29	64¾	37¾	104	56¾	41	22
41	37⅞	100	38½	38½	38½	Indiana Pipe Line	$3,000,000	$10	50cQ‡	2-15-30	94½	61	91⅞	74⅜	41⅞	26
24	17⅞	400	22⅞	22⅜	22⅞	International Pet.	$14,247,088	N.P.	12½cQ	12-16-29	29	28¼	55	35	30⅜	15
22⅜	19¼	100	19¼	19¼	19¼	National Transit	$6,362,500	$12.50	25cQ‡	12-16-29	24	13½	32⅜	19⅜	25⅛	10½
20½	14	500	20½	18	20½	New York Transit (new)	$1,000,000	$10	40cQ†	1-15-30	44½	31¼	75	38½	17½	10
54	37	100	41	41	41	Northern Pipe Line‖	$2,000,000	$50	$2SA	1- 2-30	100	70	69	56½	63	41
74⅞	66⅛	300	74½	73	74½	Ohio Oil	$60,000,000	$25	50cQ‡	12-14-29	67⅞	52	84	58½	79⅞	64⅛
32	20	100	27	27	27	Penn Mex. Fuel	$10,000,000	$25	50cQ	12-14-29	39	12	84	28	44½	20
33	21⅜	100	24	24	24	Solar Refining	$4,000,000	$25	$1.25SA	12-20-29	..	..	..	..	50	29
20	13	300	19¾	19½	19¾	Southern Pipe Line	$1,000,000	$10	50cQ	.....	27¼	15½	19	15	22½	13
46⅛	37½	300	43	43	43	South Penn Oil (new)	$30,000,000	$25	50cQ	12-30-29	41½	35	71⅞	36¾	60¼	35⅛
64	50	100	51	50¼	51	Southwest Pa. Pipe Lines	$1,750,000	$50	$1Q	10- 1-29	83	55½	102	70	70	60
59⅞	49⅞	10,800	57⅞	56½	56⅝	Standard Oil of Indiana	$348,175,069	$25	62½cQ‡	12-16-29	81½	64⅜	95⅞	70⅞	63	45
40½	33¼	2,500	38¾	37½	38⅜	Standard Oil of Kentucky	$25,654,516	$10	40cQ	12-16-29	130	111½	179¾	122¼	46⅞	29
48⅞	44⅛*	100	48⅞	48⅛	48⅛	Standard Oil of Nebraska	$4,649,225	$25	62½cQ‡	12-20-29	49½	40	54⅞	39⅞	50¼	40
108½	81	50	96¼	96¼	96¼	Standard Oil of Ohio	$14,000,000	$25	62½cQ	1- 2-30	87½	72	134	71	129	60
		No sales.				Swan-Finch Co.‖	$861,466	$25	.....	12- 2-29	21	14½	23½	16	18	10
97⅞	88⅛	10,400	97⅞	94½	96½	Vacuum Oil Co.	$126,180,350	$25	$1Q	12-20-29	..	..	111	72	133¾	75

*Plus 50 cents extra. †Plus 10 cents extra. ‡Plus 25 cents extra. ‖Bid and ask.

SESSION OF NATURAL GAS DEPARTMENT

(Continued from Page 55)

will wait till May, 1932, before conducting another. From that time on, according to the existing program, the natural gas department will make use of the exposition facilities, both for its convention and for the exhibition of natural gas equipment. Departing from custom, there is no exhibition of equipment in connecting with the convention here. It was an attractive feature of the conventions in former years, manufacturers of all kinds of devices for the production, transportation and distribution of natural gas showing the latest inventions and improvements in their various lines.

William B. Way, general manager of the International Petroleum Exposition, is here from Tulsa to confer with Major Alexander Forward, New York, managing director of the American Gas Association, and E. J. Stephany, Dallas, Tex., secretary of the natural gas department, concerning this contemplated change in the method of holding future meetings and the various details involved. Mr. Way says that the new assembly hall at the exposition grounds will be large enough to accommodate the natural gas department conventions; if additional buildings should be needed to take care of natural gas exhibits they would be erected.

Election of natural gas department officers for the next year will not take place until the annual meeting of the American Gas Association in Atlantic City next October. The nominating committee appointed to name officers will submit its report a short time before that meeting. Approval of its recommendations is little more than a matter of form. Interest centers as usual upon the choice of a vice chairman, who in accordance with established precedent, will be made chairman next year. In pursuance of this practice H. C. Cooper, Pittsburgh, the present vice chairman, will be made chairman at the Atlantic City meeting. Mr. Cooper is in charge of engineering operations of the Standard Oil Co. group of natural gas companies having headquarters in Pittsburgh.

Among the men talked of for vice chairman three from widely separated parts of the country are mentioned with frequency. They are Frank L. Chase, Dallas, vice president and operating manager of the Lone Star Gas Co.; H. L. Montgomery, Bartlesville, Okla., manager of the natural gas department of the Cities Service Co., and L. K. Langdon, Cincinnati, Ohio, counsel for the Union Gas & Electric Co. All have been outstanding figures in the natural gas industry for years. The convention will close Thursday. An interesting feature will be the open forum Wednesday with J. D. Creveling, of Henry L. Doherty & Co., acting as chairman.

ROCKY MOUNTAIN AREA

(Continued from Page 180)

2,801 feet in the red beds and headed for the Tensleep.

Uinta County

The California Co.'s No. 1 Union Pacific, NE NW, Section 7-17-116, Muddy Creek, is standing at 4,815 feet.

MONTANA

In Valley County, in northeast Montana, the Jones Oil Co. has started drilling on its first well to open a shallow gas field, about 20 miles from Opheim, on Section 31-36-38. The pay is expected between 700 and 1,000 feet and if a field develops, it is expected to become a part of the present system planned for this part of Montana by the Dakota-Montana Power interests.

Minot, N. Dak., is having a small excitement over a gas strike. A well put down to a depth of 60 feet with a post hole augur found a flow of gas at that depth that will burn steadily and furnishes enough gas for an ordinary home. Plans are now under way to drill a deep well in the vicinity. Gas in the shallow sands in North Dakota has been known for many years. Some water wells near Pierre, S. Dak., have been supplying gas to residences and business houses there for many years. The Dakota sandstone underlies all the area east of the Rockies and carries artesian water over a large part of the Dakotas. This water contains an occluded gas that is carried in suspension in the water and this gas furnishes the flows that are found around Pierre and which are often encountered in other places when wells are put down to the Dakota sand.

The strike at Minot is looked upon as the opening of a shallow gas field there and possibly a deeper one. An oil and gas company has been formed to explore the area.

Rocky Mountain Production

Daily average pipe line runs from the various pools in the Rocky Mountain area for the week ending May 3:

WYOMING	
Salt Creek	31,740
Frannie	270
Big Muddy	2,050
Oregon Basin	4,430
Dutton	10
Elk Basin	710
Ferris	40
Grass Creek	2,070
Hamilton	660
LaBarge	2,080
Lance Creek	130
Lost Soldier	3,030
Osage	1,070
Poison Spider	830
Rock River	2,180
Rex Lake	....
Lander	560
Simpson Ridge	50
Teapot Dome	40
Greybull	....
Total	51,950
MONTANA	
Cat Creek	1,190
Kevin-Sunburst	5,610
Pondera	2,310
Lake Basin	70
Total	9,180
COLORADO	
Moffat	1,049
Fort Collins	1,424
Florence	603
Iles	975
Tow Creek	436
Boulder	25
Rangley	50
Total	4,562
NEW MEXICO	
Hogback	460
Rattlesnake	416
Table Mesa	107
Artesia	723
Cap Rock (Maljamar)	928
Jal	1,534
Hobbs High	863
Getty	....
Lea	6,370
Miscellaneous (Lea County)	531
Total	11,932
Grand total	77,624
Grand total April 26	74,185
Difference	3,439

IMPROVED CONDITIONS SEEN BY VAN ECK

(Continued from Page 189)

terest, etc., equivalent to $1.66 a share on 22,332 shares of 8 per cent cumulative preferred stock on which there are unpaid back dividends. This compares with $32,919 or $1.28 a share on 25,644 preferred shares in first quarter of 1929.

New Sunray President

Crosby Gaige has been elected president of Sunray Oil Corp., succeeding C. C. Hamilton, who has resigned the position but still remains a director. Mr. Gaige is a director of the company.

Twenty Representative Stocks

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange and New York Curb, based on closing quotations for Saturday was as follows:

Sept. 21	57.93	Jan. 8	48.56
Sept. 28	58.63	Jan. 15	48.38
Oct. 5	57.00	Jan. 22	47.13
Oct. 12	59.75	Jan. 29	47.46
Oct. 19	58.70	Feb. 5	48.13
Oct. 26	54.59	Feb. 12	47.49
Oct. 31	42.29	Feb. 19	45.85
Nov. 8	48.31	Feb. 26	46.71
Nov. 15	47.61	Mar. 5	46.79
Nov. 22	47.76	Mar. 12	48.30
Nov. 29	48.60	Mar. 19	51.00
Dec. 4	50.60	Mar. 26	51.55
Dec. 11	50.51	Apr. 2	53.26
Dec. 18	49.24	Apr. 9	52.04
Dec. 24	47.36	Apr. 16	53.39
Dec. 31	48.86	Apr. 23	53.70

Southern Pipe Line

Southern Pipe Line Co. has declared a special dividend of $5 a share from the capital stock reduction account, payable June 2 to stock of record May 15. This makes $81 a share returned since the reduction of the stock from $100 to $10 par basis.

Rio Grande Oil

Rio Grande Oil Co., in letter to stockholders, explains its request recently made that rights to subscribe to additional shares to be issued be waived. The directors feel, it is stated, that the time is propitious for financing to provide additional working capital and expansion. The waiver, it is stated will not preclude offering to subscribe to stock by shareholders in the future, if found desirable. Following completion of the Long Beach marine terminal, the company expects to extend its facilities through construction of marine loading stations and wholesale plants at San Diego, San Francisco, Seattle, Portland and Vancouver.

National Refining

National Refining Co. declared regular quarterly dividends of 37½ cents on the common, payable May 15 to stock of record May 1.

Imperial Oil

Report of Imperial Oil, Ltd. (controlled by Standard Oil of New Jersey), for year ended December 31, 1929, shows net profit of $26,350,309 after federal taxes comparing with $22,963,264 in 1928.

Warner-Quinlan

Warner-Quinlan Co. stockholders will meet May 5 to vote on a proposal to increase the company's authorized stock from 1,000,000 shares, no-par value, to 1,500,000 shares, no-par value. The company is offering rights on the basis of one new share at $18 for every five now held. When the new financing is completed, there will be 759,537 no-par shares outstanding. Rights will go to stockholders of record April 25 and will expire May 15.

Houston Oil

Directors of the Houston Oil Co. of Texas authorized $25,000,000 in bonds, $12,000,000 of which already have been sold. A stock split of four shares for one, with a change from $100 to $25 par value, and a 10 per cent dividend also was authorized.

With funds from the sale of the newly authorized bonds, the company will retire the outstanding balance of approximately $7,000,000 of its 5½ per cent convertible notes. The new indenture is to care for future expansion of the oil company and the Houston Pipe Line Co., its subsidiary. Capt. E. H. Buckner, president, said: "The new indenture will care for future expansion of the oil company and the pipe line company, but we are not ready to announce that expansion program just yet."

Mexican Petroleum

Mexican Petroleum Co. declared a dividend of $20 on common payable out of surplus and the regular quarterly dividends of $3 on common and $2 on the preferred all payable April 21 to stock of record March 31.

Out of the 457,291 shares of Mexican Petroleum Co. $100 par value common stock outstanding, all but about 7,800 shares are held by Pan American Petroleum & Transport Co., controlled by Standard Oil Co. of Indiana. Only about 1.7 per cent of the Mexican Petroleum common stock is in the hands of the public. On the 3,423,907 shares of Pan American stock outstanding, about 80 per cent of which is held by Standard of Indiana, the dividend of $20 declared by Mexican Petroleum, totaling about $9,145,820, is equivalent to about $2.67 a share.

As of December 31 1928, earned surplus of Mexican Petroleum Co. amounted to $44,695,247, or almost $98 a share on the 457,300 shares of common then outstanding. On April 20, 1929, the company paid a special dividend of $40 a share on the common out of surplus in addition to the regular dividends amounting to $12 for the year.

Since 1926 earnings of Mexican Petroleum Co. have shown a rapid decline as the result of the unfavorable conditions prevailing in Mexico, where further development has been rendered unattractive to oil companies by petroleum legislation. In 1928 the company reported net profit of $8,293,338 after all charges, equivalent to $16.03 a share on the 457,300 shares of common outstanding, which compared with $12,711,702 or $25.69 a share earned in 1927. In the first six months of 1929 the company reported net of $2,527,720 after depreciation, depletion, amortization and intangible development costs, but before federal taxes, contrasting with $4,144,758 in the first six months of 1928. Based on conditions prevailing in the latter part of 1929, the company will probably show a considerable reduction in earnings for last year.

British American

Shareholders of the British American Oil Co. at their annual meeting at Toronto re-elected the following directors: George W. Allan, K.C., Winnipeg; C. P. Beaubien, Montreal; A. L. Ellsworth, S. R. Parsons, A. E. Gooderham, Toronto; C. L. Suhr, Oil City, Pa.; Henry McSweeney, Atlantic City. S. R. Parsons was re-elected chairman of the board, A. L. Ellsworth, president; P. W. Binns, secretary, and J. C. Millar, treasurer. The meeting approved plans for expansion which included a two-for-one split of the stock with quarterly dividends of 20 cents per share and a $5,000,000 issue of 5 per cent convertible and redeemable debentures, the latter already three times oversubscribed.

Mr. Parsons spoke optimistically of the outlook. For several years the company had felt the necessity of providing its own source of crude, and this had now been done in the Mid-Continent Field. Profits in 1929 would have been much larger had there not been a partial crop failure in western Canada.

PAN AMERICAN, SINCLAIR NEGOTIATE IN MEXICO

NEW YORK, May 5.—American oil companies, which have been gradually curtailing their operations in Mexican oil fields, are expected to revise their policy with respect to operations, and again resume field operations, according to reports from several sources.

Attention has been directed to the Mexican situation by the visit of Robert G. Stewart, president of Pan American Petroleum & Transport Co., who is now in Mexico City negotiating with Mexican government officials for confirmatory concessions on the Chapacoa tract in the northern section of the Tampico fields. Heavy oil suitable for the manufacture of asphalt has been discovered on this tract. Mr. Stewart's visit follows closely a similar visit to Mexico City of A. E. Watts, president of the Mexican Sinclair Petroleum Corp.

Both trips, according to reports from Mexico City, are the result of President Rubio's visit to the United States some time ago, during which he stated that Mexico would welcome and co-operate with oil companies in any plan involving increased operation in Mexico's petroleum industry.

The tendency of the Mexican government to grant confirmatory concessions is shown by the fact that of the approximately 250 applications filed for such concessions, about 180 have already been granted. These confirmatory concessions, according to the understanding of American oil companies, establish the legality of rights validly acquired prior to the enactment of the Mexican constitution of 1917, which caused considerable feeling between Mexico and this country prior to the Morrow agreement concluded two years ago.

Should the Pan American and Sinclair interests resume operations on a large scale in Mexico, it is believed that other American companies would follow suit.

GRAVER CORPORATION CHANGE

CHICAGO, May 6.—The Graver Corp. announces that it has sold its steel tank and steel plate construction business and its water treating system to the Phoenix Manufacturing Co. of Joliet, Ill., which will take over the plant at East Chicago, Ind., and continue the business. Graver Brothers will be associated in the management of the business. The Graver Corp. will continue to design, build and sell refinery equipment.

EXTENDING GAS OPERATIONS IN NEW YORK TO FINGER LAKE REGION

BRADFORD, Pa., May 3.—Over 200,000 acres, comprising 316 farms in Seneca County, New York, have been leased by the Belmont Triangle Drilling Corp. of Bradford, Pa., and the Pennsylvania Fuel Corp. of Pittsburgh, Pa., for oil and gas purposes. Some of the leases run for 10 and others for 20 years. The Pennsylvania Fuel Oil Co. is a subsidiary of the Columbia Gas & Electric Co., which has gas lines extending from West Virginia up through western Pennsylvania and into the Olean district in western New York, thence east through the southern tier of counties of New York State to the city of New York, which line the company hopes to utilize to the eastern terminus in the course of time. The Belmont Triangle Drilling Corp., of which Frank M. Brewster is general manager, recently completed two large gas wells in Schuyler County, west of Watkins, the county seat.

The oil fields of New York State are confined to Cattaraugus, Allegany and Steuben Counties, but dry gas has been found in commercial quantities in Chautauqua, Erie and other counties in western New York. In fact, the first commercial use of natural gas is credited to Fredonia, Chautauqua County, New York, as far back as 1821.

Walter A. Ver Weibe, in his recently published work, "Oil Fields in the United States," says: "Sandstones as well as limestones produce oil and gas in New York. . . . The largest quantity of gas comes from the Medina sand of the Silurian system, which is an unusually persistent producer. In Oswego, Ontario, Yates and Onondaga Counties small amounts of gas are secured from the Trenton limestone. Sands of the Portage and lower Chemung formations produce gas in Cattaraugus and Allegany Counties. A certain amount of gas has also been found in the Potsdam sandstones, which thus takes rank as the oldest producing horizon in the United States."

Oil is found in the Allegany Field and the north end of the Bradford Field in southwestern New York at about 1,700 feet or less. Paul Torrey of Bradford broached the idea of drilling deeper in search of oil or gas while engaged in making a geological survey of the Allegany Field and a company was formed which drilled a deep test in western Allegany County, which found a 5,000,000-foot gas production. Other wells drilled thereabouts failed to discover either gas or oil. A widespread geological survey of the area northwest of the Bolivar-Richburg, or Allegany, Field resulted in the leasing of great blocks of land in Allegany, Steuben, Schuyler and Yates Counties, and the latest leasing campaign, taking in Seneca County, brings oil and gas operators far outside the region where practical operators of past years thought oil or gas might exist, having been led to this conclusion by many test wells that failed to find anything at any level to which they drilled in those days when 2,000 feet was considered a great drilling depth. The new generation of oil and gas men operating in the Bradford-Allegany Field have no more respect for depths than their western brothers and are prepared to go to any depth necessary to penetrate the formations they seek.

It happens, though, that the new drilling campaign with gas as the objective has not thus far necessitated very deep drilling. The Belmont Quadrangle Drilling Co., which completed a 6,000,000-foot and a 10,000,000-foot gas well in Tyrone Township, Schuyler County, only a short distance from the beautiful Watkins Glen, found gas at 2,081 feet in its first well and at 2,017 feet in the second, and in its Seneca County operations the Oriskany sandstone (lower Devonian) is estimated to lie at 2,000 feet and the Medina sandstone (lower Silurian) at 3,200 feet. Wells will be drilled this summer in the townships of Varick, Romulus and Lodi, Seneca County, between Cayuga and the Seneca Lakes, in one of the most beautiful regions in eastern America.

The Columbia Gas & Electric Co.'s line to New York crosses the State just south of the gas fields, known and prospective. It is the old New York Pipe Line Co. (Standard) line, which conveyed oil to East Coast refineries for several decades before it was abandoned as an oil line and bought by the Columbia organization with an eye to furnishing the big city and points enroute with natural gas.

80 ACRES TO THE WELL

Thomas B. Slick, a firm believer in the policy of drilling one well to 80 acres in the early development of new territory, may yet see his plan carried out in Oklahoma and Kansas in areas developed in the future. Already a tentative agreement has been reached between the Thomas B. Slick Oil Co., Magnolia Petroleum Co., Prairie Oil & Gas Co. and Coline Oil Co. to develop central Oklahoma holdings outside of the proven Oklahoma City Field in that manner providing they can get other operators to adopt the plan. The development of the Perry areas in Noble County, recently opened by the Magnolia Petroleum Co. may also be operated in that way, the Magnolia, Slick and the Prairie companies having approved the plan. Mr. Slick is endeavoring to interest operators in Rice County, Kansas, in the same method of operating and on Tuesday he said he was sanguine of success.

MISSOURI-KANSAS PIPE LINE CO. TO BUILD 725-MILE LINE NORTH

FORT WORTH, Tex., May 5.—The Missouri-Kansas Pipe Line Co. is reported to have approximately 85,000 acres of gas lands in Carson, Potter, Moore, Hutchinson and Hansford Counties, in the Panhandle of Texas, and in Stephens and Texas Counties, Oklahoma, having a present reserve capacity for a 24-inch line for approximately 30 years, according to engineers' and geologists' estimates, is building 725 miles of gas line from that area to central Missouri and Illinois.

Three hundred and seventy-five miles of this line will be 24-inch and 350 miles will be 22-inch, the pipe being manufactured by the National Tube Co. at Pittsburgh, Pa. Cost of this pipe was reported to be $15,000,000, the largest order of pipe ever made at one time, according to men connected with the Missouri-Kansas company.

The southern terminus, it is said here, will be in the Panhandle fields, but the northern terminus has not been announced, being reported variously as Omaha and Minneapolis. One booster station will be erected every 150 miles.

Pipe and material is to be delivered May 10, the line to be completed in approximately six months. Engineers and right of way men have been in the field for the past five weeks surveying and making right of way purchases.

The Texas Interstate Pipe Line Co., which is wholly owned by the Missouri-Kansas Pipe Line Co., which has offices at Kansas City and Chicago, will own and operate the new line, and Frank P. Parish will be president of the new company as well as president of the parent company.

Officers of the Missouri-Kansas Pipe Line Co. are as follows: Frank P. Parish, president; Burt R. Bay, vice president and general manager; J. F. McManmon, vice president; S. J. Maddin, vice president; W. J. Hinchey, vice president; R. G. Crandall, vice president; W. T. Stevenson, treasurer; W. H. Scholp, secretary. Directors are as follows: Frank P. Parish, president; Francis I. du Pont, Wilmington, Del.; Burt R. Bay, vice president and general manager, Kansas City, Mo.; James F. McManmon, vice president, Chicago, Ill.; S. J. Maddin, vice president, Chicago, Ill.; Ralph G. Crandall, vice president and general counsel, Chicago, Ill.; Charles A. Meyer, Toledo, Ohio; Ralph B. Mayo, of Ralph B. Mayo & Co., C.P.A., Denver, Colo.; C. S. Shippey, oil and gas operator, Kansas City, Mo. Mr. Parish, Mr. Bay, Mr. McManmon, Mr. Maddin and Mr. Shippey have an average of 22 years' continuous service in the natural gas and oil industries.

The company, with its subsidiaries, reports it controls 1,809 producing gas and oil wells, and exclusive of lines now under construction owns and operates 796 miles of modern pipe line. Total assets of the company are listed at $20,162,330.70. It is a Delaware chartered company engaged in the production, purchasing, transportation and distribution of natural gas, and is operating in Kansas, Missouri, Illinois, Indiana and Kentucky.

H. S. Lyons is the company's representative at Dallas, Tex.

Officials of the Missouri-Kansas Pipe Line Co. authorized issuance of the following statement:

"Negotiations for northern markets have been satisfactorily completed and an order has been placed for 725 miles of major pipe line. The contract calls for pipe deliveries to commence May 10. This line is designed to have an ultimate capacity of 200,000,000 feet. The National Tube Co., recipients of the pipe contract, states this to be the largest single pipe line order ever placed."

In reply to an inquiry from The Oil and Gas Journal President Frank P. Parish, after confirming the order for pipe and beginning of construction May 10 said:

"Expansion of our Missouri and Kansas pipe lines into central Missouri and central and southern Illinois represent only a part of this program. Additional details will be available in near future."

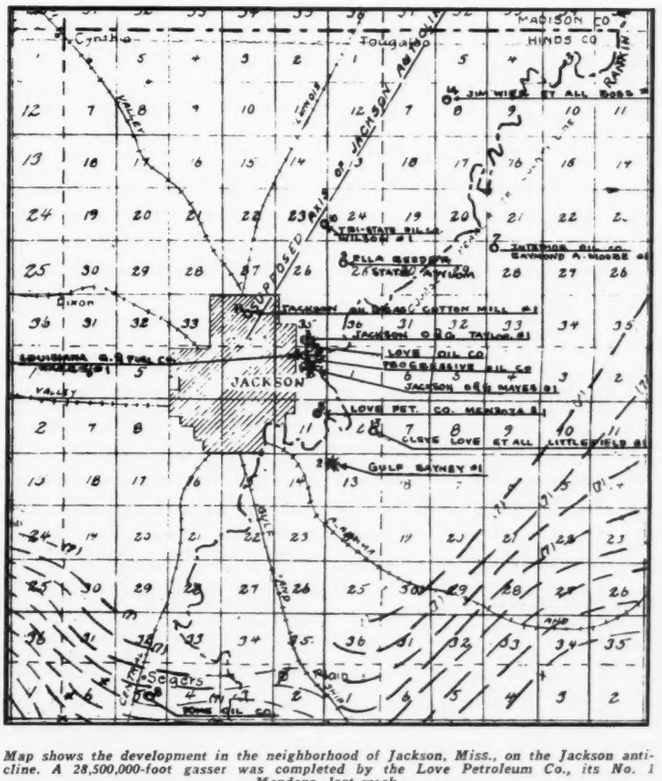
THOROUGH TEST FOR JACKSON ANTICLINE

(Continued from Page 56)

Practically all of the major companies have scouts, land men, lease men and geologists stationed at Jackson or vicinity, although the major part of the geological work was completed some time ago and was subsequently followed up with the magnetometer, torsion balance and geophone geophysical crews. At the present time one of the major companies is moving in core drilling machines.

The general opinion of the old-time oil men who witnessed the test of the Gulf Refining Co.'s Rainey well is that a field of considerable magnitude will be developed somewhere in the vicinity of Jackson.

Note—Since the above was written the Love Petroleum Co.'s No. 1 Mendoza blew in and on a 15-minute gauge produced gas at the rate of 28,500,000 feet per day.



Map shows the development in the neighborhood of Jackson, Miss., on the Jackson anticline. A 28,500,000-foot gasser was completed by the Love Petroleum Co., its No. 1 Mendoza, last week.

SHORTAGE OF FUEL OIL IN GULF COAST SECTION

HOUSTON, Tex., May 6.—An acute shortage of fuel oil evidently has developed in the Gulf Coast refinery market. Buyers attempting a survey of the situation Tuesday stated that stocks of fuel on the Coast had been drained so low that it would be impossible to fill a cargo or a part of a cargo from any source. It was stated that fuel is the tightest it has been at any time in history.

At the opening of the week a nominal minimum quotation of 80 cents for bunker fuel in cargo lots existed but buyers admitted that material could not be obtained for any price. Fuel for bunkering continued to be quoted at $1.05 minimum but this material generally is moved through regular channels and a steady supply is maintained.

The present situation is in contrast to that of two months ago when fuel was a drug on the market and prices as low as 60 cents were reported. Because of the excessive stocks at that time sellers started cracking fuel on a larger scale in preference to running large quantities of raw crude and creating larger stocks of fuel. The continuation of that policy has resulted in the almost complete depletion of the fuel supply with sellers running their current production to cracking stills.

PRODUCTION OF VAN INCREASES WITH ITS 27 WELLS PINCHED IN

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., May 5.—The Van Pool, Van Zandt County, now has a total of 27 producing wells with a daily average production running around 28,000 bbls. The wells are all pinched due to lack of storage and pipe line facilities.

Pure Oil Co. completed its No. 1 Crim on the western side of the field for an initial production of 50 bbls. through a 2½-inch choke, one of the largest chokes used in the field, consequently the well is showing up as the smallest producer yet completed. It topped the Pecan Gap at 1,745-1,920 feet and the Austin chalk at 2,650-2,850 feet, and top of the Woodbine sand at 2,880 feet. It was drilled to a total depth of 3,082 feet but encountered salt water and was plugged back to 3,037 feet, where it was finally completed.

Pure Oil Co.'s No. 1 Peters was another well on the western side of the field, a short distance east of the abovementioned well, which encountered salt water and was plugged back from a total depth of 3,023 feet to 2,964 feet, where it was completed for 842 bbls. on a one-half inch choke. Hill & Hill of Fort Worth have an interest in this test.

Two Dry-Hole Tests

Two wildcat tests in the East Central Texas were abandoned as dry in the past week, one of them being Humble Oil & Refining Co.'s No. 1 W. Johnson in Anderson, which was abandoned at a total depth of 3,582 feet, and the Gulf Refining Co. abandoning the other on the Carver farm at a total depth of 5,430 feet.

Shell Petroleum Corp.'s No. 1 Stephens, near the town of La Rue in eastern Henderson County has probably thrown a larger cloud over this district than any other abandoned wildcat up at the present time, and although this test has not been abandoned there are not many to be found who still hold out much hopes of it making a producer. The last report from the field showed it drilling at 3,610 feet in shale with streaks of sand, it having gone out of the Woodbine series, with no showings of gas or oil to help buoy up the spirits of those interested in the test or holding surrounding acreage.

Big Indian Oil Co.'s No. 1 R. King in the William Barnhill Survey, Wood County, is drilling in Pecan Gap chalk which it topped at 2,636 feet.

Upchurch and others' No. 1 Owlet Green School House test 4 miles southwest of the Van Pool in Van Zandt County topped the Austin chalk at 2,985 feet and went out of it at 3,015 feet, showing the test to be running low in comparison to the Van wells.

Another test in Henderson County which is getting rather deep with no appreciable showings of oil and gas is Cranfill & Reynolds' No. 1 Broome in the Samuel Chears Survey. It is drilling water sand in the Woodbine series at 4,595 feet. Last week it struck a small amount of heavy black oil in the Eagleford shale at 4,430-45 feet, but did not create much excitement. West Texas Oil Royalty Co.'s No. 1 Negro Orphanage, located 1 mile south of the town of Mineola in the C. E. River Survey, is drilling at 3,405 feet with no oil shows. This was an interesting test within a big block taken by the Pure Oil Co., but the present status of the well does not reflect so favorably upon the adjoining acreage at this writing.

Approximately one-half of Pure Oil Co.'s 10-inch line from Van to Smiths Bluff has been welded, showing that the pipe line crews have been putting in some hard work on this line for the past few weeks, and practically proving that it will be completed and ready to run oil from the Van Pool within another six weeks if the East Texas waterspouts do not interfere with the work. Pump stations are being built at nine places along the line and the General Electric Co. has shipped out nine 400-horsepower, 3,600 r.p.m., 22,000-vole, three-phase, six-cycle motors of the squirrel-cage type to drive nine Worthington centrifugal pumps, which will have a capacity of 30,000 bbls. per day, but which can be stepped up to 42,000 bbls. per day with these motors and pumps.

No further announcements have been made in regard to the casinghead gasoline plant that the Pure Oil Co. proposed to erect in the Van Field.

Daily average production in the week ending May 3:

Boggy Creek	3,575
Cedar Creek	65
Currie	394
Hill County	45
Mexia	4,278
Minerva	470
Nigger Creek	220
Powell	5,834
Richland	240
Thrall	42
Van	31,129
Wortham	905
Total	37,197
Week ending April 26	35,497
Increase	1,700

COMPLETIONS

Anderson County

Humble Oil & Refining Co.'s No. 1 W. Johnson was dry and abandoned at a total depth of 3,582 feet.

Van County

Pure Oil Co.'s No. 1 Cannon was completed for an initial production of 1,130 bbls. through a one-half inch choke at a total depth of 2,874 feet. The sand record could not be ascertained. Pure Oil Co.'s No. 1 Clark & Houston was completed at a total depth of 2,870 feet for an initial production of 272 bbls. the first 12 hours flowing through an eleven-sixteenths inch choke. Top of the Woodbine sand was 2,685 feet.

Pure Oil Co.'s No. 1 Crim which topped the Pecan Gap chalk from 1,745-1,920 feet and the Austin chalk from 2,650-2,850 feet and the Woodbine sand at 2,880 feet, was completed for an initial production of only 50 bbls. on a 2½-inch choke. Total depth was 3,082 feet, but was plugged back to 3,037 feet to shut off salt water.

Pure Oil Co.'s No. 1 Ellison topped the Woodbine sand at 2,870 feet and was completed for an initial production of 300 feet. Total depth is 2,942 feet.

Pure Oil Co.'s No. 1 Peters was completed for an initial production of 842 bbls on a half inch choke. Total depth was 3,023 feet but was plugged back to 2,964 feet to shut off salt water.

Pure Oil Co.'s No. 2 Tunnell topped the Woodbine sand at 2,560 feet and was completed at a total depth of 2,879 feet for an initial production of 1,570 bbls. on one-half inch choke.

Wood County

The Gulf Production Co. abandoned its No. 1 Carver in the William Kerns Survey at a total depth of 5,430 feet in chalk.

EAST CENTRAL TEXAS WILDCATS

Week Ended May 3

ANDERSON COUNTY

R. H. Keen's No. 1 Murdock, 800 ft. S and 175 ft. E of NW cor. Broomfield Sur. ..... S. D. 100 ft.

Navarro, Sun and Humble's No. 1 Gardner, 1,150 ft. from N and 150 ft. from E of 147.5-acre tract in M. M. Salizar Sur. ..... Location.

Sun Oil Co.'s No. 1 Bowers & Maier, 1,000 ft. NE of SW and 1,450 ft. NW of SE lines of 548-acre tract in E. G. Mayers Sur., 6 miles southwest of Palestine. .. Top Pecan Gap 1,120 ft.; drlg. 1,630 ft.

FREESTONE COUNTY

Killam & Phillips' No. 1 Killam, 150 ft. from N and 1,310 ft. E of 272½-ac. tract, A. Sanchez Sur. ..... Resetting csg.; T. D. 1,434 ft.

HENDERSON COUNTY

H. B. Ashburn et al's No. 1 T. E. Barry, center of Barry's 59-acre tract in A. York Sur. ..... S. D. 1,830 ft.

Chapman's No. 1 Cade, 1,662 ft. from N and 3,294 ft. from W of J. B. Dorsey Sur. ..... Drlg. 2,685 ft.

Cranfill-Reynolds & Louisiana's No. 1 A. J. Broome, 1,350 ft. S of N and 150 ft. E of W lines of easterly Broome Farm in Samuel Chears Sur. ..... Top Pecan Gap 2,695 ft., base 2,890 ft.; base Austin chalk 4,070 ft.; top Woodbine 4,226 ft.; drlg. 4,546 ft.

Shell's No. 1 Stephens, 760 ft. from S, 830 ft. from E lines I. D. Owens Sur., S. T. Stephens 118-ac. tract ..... Top Pecan Gap chalk 2,050 ft.; elevation 514 ft.; base Pecan Gap 2,130 ft.; top Austin chalk 2,916 ft.; base Austin chalk 3,155 ft.; top Woodbine series 3,174 ft.; coring 3,465 ft., sand and shale.

KAUFMAN COUNTY

Sawill et al's No. 1 Ables, 1,200 ft. from SE, 1,000 ft. from SW of Ables' 233-acre tract, Elizabeth Ables Sur. ..... Drlg. 450 ft.

RAINS COUNTY

Everett & Morrison's No. 1 Franklin, 640 ft. from S and E of 75-acre tract in John Christian Sur., 6 miles SE of Emory ..... Location.

Kugle's No. 1 Freeman, 150 ft. from S and W of 89-acre tract in A. J. Lagvene Sur., 4 miles SE of Winona ..... Location.

Owens & Sloan's No. 1 Hill, 150 ft. out of NW cor. of 150-ac. tract, T. McMahon Sur. ..... Drlg. 650 ft.

SMITH COUNTY

Adair & Daniels' No. 1 Porter, 200 ft. S of S line of Wm. H. Malone Sur. and C of W half of S line of survey in David Wilson Sur. ..... Drlg. 925 ft.

Owen Sloan Oil Co.'s No. 1 Starnes, 846 ft. along W lines of John Waller Sur. from NE cor. of J. O. Dillard Sur. and 80 ft. E at right angles to W line of J. Waller Sur. ..... S. D. 1,322 ft.

Sutton et al's No. 1 W. D. Hammond, 150 ft. out of SW cor. W. D. Hammond tract in Jas. Reed Sur. ..... Base Pecan Gap 2,912 ft.; S. D. 3,080 ft.

VAN ZANDT COUNTY

L. R. Barton's No. 1 Wamble, 300 ft. from S and W of 100-ac. tract in Pleasant Young Sur. ..... Location.

Chapman et al's No. 1 Clarke, 150 ft. from N and W of 76-ac. tract, John Walling Sur. ..... Derrick.

Craft & Kelsey's No. 1 Euas, John Prade Sur., 150 ft. from E and 71 ft. at right angles to intersection of Sam Allen tract, north farm. ..... Derrick.

Cranfill & Reynolds' No. 1 Alexander, 150 ft. from S and W of 42-ac. tract, J. Burleson Sur., 1 mile S of Grand Saline ..... Drlg. 2,810 ft.; top Pecan Gap 2,675 ft.

Cranfill & Reynolds' No. 1 Clark, 160 ft. from W and 52½ ft. from N of strip 101½ by 1,100 ft. off N end Clark's 24-ac. tract, J. Walling Sur., SE of discovery ..... Top Austin chalk 2,450 ft.; shut down 2,705 ft. to set csg.

T. Daniels' No. 1 Fannie Cumbine, 185 ft. S and 175 ft. E of NW cor. 156-acre tract John Wright Sur. ..... Drlg. 1,005 ft.

Dennis Oil Co.'s No. 1 C. W. Morris, 100 ft. from N and 300 ft. from E lines of Morris 160-acre tract in C. L. Morris Sur., 5 miles SE of Ben Wheeler. ..... Coring 2,575 ft.

Grand Saline Oil Co.'s No. 1 Carns, 200 ft. from S and W of most westerly SW cor. of 588-acre tract in S.P.R.R. Sur., Abstract 887, 4½ miles N of Grand Saline ..... Location.

Hartt Oil Co.'s No. 1 Dr. L. M. Cox in A. C. Night Sur. 1,785 ft. N of S line and 524 ft. E of W line ..... Derrick.

Howard & Dooley's No. 1 Elliott 188-ac. tract in W. H. Bundy Sur. ..... Derrick.

Imperator Oil Co.'s No. 1 Canter, 150 ft. from N and W of Carter 171-ac. tract, W. M. Daniels Sur., NE of Van Pool ..... Derrick.

Pandem Oil Co.'s No. 1 Brinn & Gibbard in Ramon Sunigas Sur., NE of Grand Saline ..... Pecan Gap 2,850-2,975 ft.; S. D. 3,045 ft.

Priest et al's No. 1 Blewett, 175 ft. NW and SW of SE cor. of NW 84-ac. tract, E. Porter Sur. ..... Derrick.

Short et al's No. 1 B. C. Andrews, 330 ft. N and 160 ft. E of NE cor. of J. P. Farley 60-acre tract in Margaret Nell Sur. ..... S. D. 3,004 ft. in shale.

Texas Chief Oil Co.'s No. 1 Foster, 600 ft. E of W line and 600 ft. N of S line of W. P. Foster's 151-acre tract in F. Montgomery Sur., 7 miles south of Canton. ..... Spudded and shut down.

Pure Oil Co.'s No. 1 Clarke, S offset to Cranfill & Reynolds' No. 1 Clarke ..... Location.

Pure-Humble's No. 1 L. V. Freeman, 250 ft. from E and 712 ft. from N line of 31.5-accre tract in John Walling Sur., one-half mile E of discovery. ..... T. D. 3,017 ft.; P. B. to 2,965 ft.; made 98 per cent salt water.

Shell Pet. Corp.'s No. 2 Fowler, Lease 302, 250 ft. N of S and 200 ft. E of W lines of Fowler 35.35-ac. tract ..... Drlg. 2,626 ft.; flowed 1,200 bbls. at 2,600 ft.

Van Zandt Oil & Dev. Co.'s No. 1 Robinson, located NE cor. of Y'Barbo Sur., 4 miles E of Grand Saline. .... Top Pecan Gap chalk 2,764 ft.; Drlg. 3,280 ft.

Upchurch et al's No. 1 Owlet, 4 miles SW of pool, Green School House ..... Drlg. 2,815 ft.

Pure Oil Co.'s No. 3 Jarman, 657 ft. from S and 250 ft. from W of 134-ac. tract ..... Drlg. 570 ft.

Pure Oil Co.'s No. 4 Jarman, 825 ft. from E and 560 ft. from S of Jarman 134-ac. tract ..... Drlg. 1,690 ft.

Pure Oil Co.'s No. 1 Leanard, 777 ft. from S and 200 ft. from W of 47.5-ac. tract ..... Derrick.

Pure Oil Co.'s No. 3 Thompson, 270 ft. from N and 122 ft. from E of 50.75-ac. tract offsetting No. 1 Fowler ..... Drlg. 2,125 ft.

Pure Oil Co.'s No. 1 Tunnell, 120 ft. from S, 1,109 ft. from W of 4.23-ac. tract, M. Gross Sur. ..... Set 10-in. csg. 297 ft.

Pure Oil Co.'s No. 2 Wells, 250 ft. out of most easterly NE cor. 41.5-ac. tract ..... Drlg. 895 ft.

WOOD COUNTY

Big Indian Oil Co.'s No. 1 R. J. King, 450 ft. W of E line and 150 ft. N of S line of King's 109-acre tract in Wm. Barnhill Sur. ..... Drlg. 2,615 ft.

Pace et al's No. 1 Dickey, 1,200 ft. from E and 300 ft. from S of Dickey 120-ac. tract, J. O. Clark Sur. .... Top Navarro 1,825 ft.; S. D. 2,061 ft.

West Texas Royalty Co.'s No. 1 Negro Orphanage, 250 ft. N and W of SE cor. of 100-acre tract in C. E. Rivers Sur., 1 mile south of Mineola. ..... S. O. 1,847 ft., in Navarro; top Pecan Gap 3,043 ft.; top Navarro 1,800 ft.; show oil 1,840 ft.; top Austin chalk 3,915 ft.; drlg. 4,055 ft.

GEOPHYSICAL PROSPECTING FOR PETROLEUM ON GULF COAST

By Donald Barton
Consulting Geologist and Geophysicist, Houston, Tex.*

The present status of the gravity minima is as follows:

Two types of minima are recognized, the one of subcircular type and the other a linear ridge of minima. The subcircular minima are now recognized to be the anomalies due to deep and very deep salt domes or to the roots of shallow domes. The center of the observed minima is known to be subject to shift from the center of the crest of uplift and the shift is known to be due either to one or both of two causes; the one is the shift of the observed center of the minima due to the presence of a regional gradient produced by large scale anomalies other than the salt dome under consideration; the other is due to the presence of a neutral zone extending from 1,000 or 2,000 feet down to 4,000 to 7,000 feet. In this neutral zone, the salt has the same density or so near the same density as the surrounding mass that the presence and form of the horizontal mass can be detected by gravitational methods. The torsion balance survey, therefore, will give for the position of the center of the dome, the center of gravity of the mass of salt below 7,000 feet, but for the oil man, a spine of salt rising to 6, 5, or 4,000 feet will control the up-lift. The torsion balance, therefore, will give a definite indication of the presence of the dome but will give an indefinite indication of the exact position of the crest of the dome. The torsion balance, also, gives no indication of the closeness with which deformation of the super salt beds extends toward the surface. A salt block may have been thrust up to a position which is now 7,000 feet below the surface during Jackson times, for example, but has suffered no up-thrust since the beginning of Oligocene and the Miocene, therefore, would extend across the dome without arching and would not offer structural conditions favorable for the accumulation of oil. The torsion balance, however, would map the presence of the dome and give essentially the same anomalies whether the beds above 7,000 feet were arched or not. The salt ridge minima represent structure which still is largely unknown in quantity. From the gravity anomalies which they produce and from analogy with the German salt domes and salt ridges, the interpretation of them quite clearly is that they are very deep salt ridges, many of them extending for a great many miles across country. Their presence has not been checked by the seismograph and we do not know how deep their salt core lies. There is a possibility that the up-lift of the salt in these salt ridges was early in the history of salt dome activity in the Gulf Coast and that, therefore, no deformation exists in the beds above a depth of from 7,000, 8,000 or 9,000 feet.

Two Types

The present status of gravity maxima in the Gulf Coast is that there are at least two types. A certain type is known to be the anomaly produced by shallow salt domes, that is, domes rising above 2,000 feet. This type of maximum is rather sharp and well-defined and is usually at the center of a gravity minimum which, however, may be faint. Except under peculiar conditions, the gradient toward the dome does not extend out far from the edge of the salt. The old main type of maximum is one of large areal size with gradients extending in many cases for miles from the center of the maximum. The shape of the maximum is more irregular and the maximum may be a nose of maximum rather than a closed maximum and it may be somewhat elongated. This type of maximum is recognized quite clearly as being the interference phenomina of two or more minima produced by salt domes or salt ridges in the surrounding area or the maximum may be thought of, also, as due to the presence of the sediments between the salt domes. There is a third and less important type of maximum which probably is due to irregularities of density in the upper sediments. This type of maximum has a very much smaller areal extent and is more irregular than either of the preceding types. There is a possibility that there is yet another type of maxima in the Gulf Coast. One torsion balance maximum of which I know does not look like any other preceding type of maxima and the seismograph has checked the presence of some salt on an uplift at approximately the same point. It is possible, therefore, that we may have maxima which will be significant of some sort of a structure other than a salt dome. This maximum, however, is quite different in aspect from any of the other three types of maxima.

Technique of Interpretation

The evolution of the technique of interpretation of torosion balance results in the Gulf Coast, therefore, has reached the point at which we can differentiate and recognize different types of maxima and recognize the difference in their interpretation where, heretofore, we could not and where heretofore, the results of drilling seemed to refute our theoretical interpretation of the minima, the results of more recent work have shown that our interpretation of the minima was about 75 per cent correct but that the 25 per cent inaccuracy was sufficient to lead to the failure of drilling.

Analogies always are dangerous and because the evolution of the application of the torsion balance method has turned out favorably to the torsion balance method in the Gulf Coast is, of course, no necessary proof that the trend of evolution of the geophysical methods will be the same in other districts. I feel less sure that this analogy will hold for the magnetic method than I do for the other methods, but still, I have a feeling that even with the magnetic method, the analogy will hold to some extent. All of the methods in some place have shown to great advantage an ability to handle the mapping of structure for them to have potentially not much greater undeveloped ability. One of our great lacks is that of experience in the interpretation of the methods and much of that experience must wait until we have better geological knowledge with which to check our torsion balance interpretation.

Structural Mapping

Figuratively speaking in connection with the application of the geophysical methods to structural mapping in known salt dome areas, we have got to learn the difference between our various types of maxima and we have got to learn when our geophysical method is indicating definitely the presence of a structure but is indefinitely indicating the crest of the structure. Our knowledge of the interpretation of many areas is growing similarly as in the Gulf Coast and in West Texas, North Texas, Oklahoma and Kansas, we now recognize that certain large maxima do not represent structure reaching within reach of the drill, but probably must represent large batholiths within the basement, and we know that certain types of maxima may be deeper than we had expected, but we are having great difficulty in checking our interpretation with the geological situation because the geological situation is all unknown. At Edgerly, the significance of the Shell Petroleum Corp.'s 5,200-foot hole in the center of the East Edgerly Field was not evident until the salt was discovered at the depth of 4,000 feet about one-half mile to the southwest and similarly many failures of wells to check geophysical structures in West Texas, Oklahoma, and elsewhere may be due to the fact that the geophysical interpretation of the crest was shifted a little bit away.

Many companies have made extensive torsion balance and magnetometer surveys and now are wondering whether the surveys are worth the tracing cloth on which the results have been drawn up. This is particularly true of magnetometer surveys. My feeling is that ultimately the knowledge of the correct interpretation of the many anomalies will come and may come rather suddenly as it has in the Gulf Coast. If an oil company had gone ahead in the years 1925, 1926 and 1927 with an extensive area survey of the Gulf Coast salt dome area, it would have been in a position in 1928 and 1929 to have reaped an enormous dividend from the survey. When the significance of these large minima became evident, they then would have known where immediately to put their finger on them and would have been able to block as many as they cared or knowing the indefiniteness or definiteness of the indication of a deep salt dome by the torsion balance, they would have been able to scatter a choice selection of production acreage over the domes which they did not care to block.

If geophysical surveys are made with proper care and accuracy, the results will be valid to eternity although, with the increase of knowledge of the methods, the older surveys may have to be supplemented by additional work at points which later knowledge shows to be critical. The accuracy of many company surveys, however, is distinctly open to doubt. The history of the evolution of interpretation is that smaller differences become increasingly of greater significance as time goes on and that now, for example, in the torsion balance method, the seismic method, and magnetic method, we are playing and we are regarding significant anomalies which are very much smaller than those we should have felt warranted to consider about three years ago.

*Continued from The Oil and Gas Journal, May 1, 1930.

INCREASE IN APRIL IN NEW WORK COMPLETIONS AND NEW PRODUCTION

April was a busy month in the fields east of California and the results of drilling operations were big in some sections. A total of 1,903 wells completed represented an increase of 157 over April, and the 798,560 bbls. initial production was 262,397 bbls. in excess of the April record. Forty more dry holes were drilled and 31 more gas wells were completed.

The Oklahoma City Field in Oklahoma, the Van Pool in Van Zandt County, Texas, the Darst Creek Pool in Guadalupe County, Texas, and the Graham Pool in Young County, Texas, showed the largest new production in the month.

In new operations an increase of 189 is noted and these, added to the 157 more wells completed, indicated that in the course of April there were 346 more operations under way than in March, quite a remarkable gain, and indicating that notwithstanding warnings of overproduction, the producing end of the industry cannot be so easily held back when spring opens up.

Following are the summaries in all the fields east of California:

SUMMARY OF ALL FIELDS
Wells Completed

	Comp.	Prod.	Dry	Gas
Eastern	421	2,390	50	63
Central Ohio	96	1,663	26	41
Lima	12	68	1	1
Indiana	11	252	5	1
Michigan	35	2,164	16	2
Kentucky	127	2,371	32	5
Illinois	18	111	11	1
Kansas	85	15,609	33	4
Oklahoma	360	556,508	106	35
North Central Texas	291	33,894	156	9
East Central Texas	15	25,000	6	0
East Texas	4	0	0	4
West Texas	63	18,035	23	2
Panhandle Texas	38	15,014	6	5
Gulf Coast	130	39,812	50	2
Southwest Texas	76	78,452	28	4
North Louisiana	72	4,771	25	20
Arkansas	16	1,085	9	1
Mississippi	1	0	0	1
Montana	7	590	1	1
Wyoming	8	325	3	1
Colorado	7	145	4	0
New Mexico	10	211	5	4
Total April	1903	798,560	595	211
Total March	1746	536,163	555	180
Difference	157	262,397	40	31

Rigs and Wells Drilling

	Rigs	Drlg.	Total
Eastern	112	362	474
Central Ohio	95	190	285
Lima	2	27	29
Indiana	3	50	53
Michigan	54	109	163
Kentucky	14	140	154
Illinois	1	34	35
Kansas	38	268	306
Oklahoma	137	777	914
North Central Texas	69	339	408
East Central Texas	6	55	61
East Texas	3	12	15
West Texas	61	233	294
Panhandle Texas	42	145	187
Gulf Coast	23	204	227
Southwest Texas	64	114	178
North Louisiana	88	137	225
Arkansas	17	34	51
Mississippi	3	16	19
Alabama	2	3	5
Montana	20	82	102
Wyoming	25	118	143
Colorado	16	78	94
New Mexico	36	63	99
Utah	3	32	35
Total April	934	3,622	4,556
Total March	856	3,511	4,367
Difference	78	111	189

GULF IN EAST INDIES

The Gulf Oil Corp. has formed a Dutch subsidiary known as the Amsterdam Gulf Petroleum Co. according to a report from Amsterdam. The new company is reported to have already applied for several concessions with oil possibilities in the Dutch East Indies.

EXPORTERS PLACE MAY GASOLINE ORDERS

(Continued from Page 54)

start of April were less than on the same date last year. This is in contrast to the general situation for the entire United States on that date when stocks at refineries were almost 15 per cent greater. Gasoline stocks at Oklahoma and Kansas refineries on April 1 were 750,000 bbls. less than on the same date last year. Some of the larger refiners in these States who have been expanding their retail outlets drew on storage both in March and April and started May with their stocks in excellent shape. Unfortunately, however, from the market angle there are other refiners dependent on jobber outlets who have much larger stocks than they had a year ago and they are direct factors in the tank car market from week to week.

Gasoline and Naphtha

So far as the Oklahoma market is concerned the U. S. Motor gasoline on Monday and Tuesday appeared to be pegged at a low of 7 cents with the larger refiners continuing to quote 7½ cents to the trade. Several reported that their shipments both on contracts and spot sales were held up the first of the week due to weather conditions. There has been considerable rain over a wide territory and retail sales have slowed up. In other parts of the country weather conditions have been exceptionally favorable for gasoline consumption.

It is felt that jobbers stocks which were high at the end of April will be substantially less by the middle of the month and buying will improve. Although little has been heard regarding another advance in crude oil prices within the past few days, most market observers still feel this will develop before the end of the month despite the reduction last week in Pennsylvania crude oil prices. It is this expectation of higher crude oil prices that is preventing several refiners from lowering their prices to secure additional gasoline business. One large refinery operator predicts that the major refiners in Oklahoma and Kansas will be quoting 8 cents on U. S. Motor gasoline by the end of the month with a 1-cent advance in tank wagon and service station prices in the Middle West.

Some sales of U. S. Motor gasoline

have been made over May as low as 7 cents. It is not believed that the quantity of material sold over the month on a flat price is large as market conditions are so uncertain that neither buyers or sellers care to speculate.

The higher gravity gasolines for domestic movement were generally holding at prices effective last month. The export orders have tended to minimize the importance of export sales and a few sellers who were offering material the latter part of April have withdrawn from the market. The demand for 400 endpoint gasoline at a price one-fourth cent above U. S. Motor gasoline is active.

Kerosene

The Mid-Conttnent kerosene market appears to be held down by a general condition reflected in the Bureau of Mines report for March. With a 9 per cent decrease in exports the first three months of this year and only a small increase in the domestic demand for the country as a whole there was not the usual withdrawal from storage and heavy stocks are apparent in several refining areas. Price concessions in Oklahoma are reported occasionally although the general market for the 41-43 water white grade continues at 4¼ to 4½ cents. Resale purchases as low as 4 cents were reported last week.

Distillate

Activity in furnace oil distillates is confined to routine sales and contracts for next season. Refiners are receiving numerous inquiries from jobbers who are anxious to contract for their season's supplies starting in September. The contracts under consideration or actually closed are usually based on published quotations with a maximum guarantee to the buyer. The latter depends on the grade of material. The maximum guarantees reported vary from 3½ to 4½ cents.

Fuel Oil and Gas Oil

Some of the sellers reported more inquiries for fuel oil, particularly the industrial grades. Price ranges have not changed on the several grades. Considerable gas oil is being offered in Oklahoma and other Mid-Continent groups. Industrial grades were bought in the group as low as 2⅛ cents the first of the week. Prices on U.G.I. and straw color, low cold test grades ranged up to 2⅝ cents.

Natural Gasoline

Natural gasoline prices have held firm with 6½ cents the prevailing price on all grades. Weak spots in the market generally do not extend over a day as buyers are willing to take on specification material at present prices. Contracts for May have been closed assuring the usual movement from the Mid-Continent to Gulf Coast points.

Lubricants

Wide differences of opinion are expressed on the market situation in regard to steam refined stocks and bright stocks. Buyers report important concessions both in the Mid-Continent adjoining refining groups. No changes, however, have been made in quotations to the trade by the larger manufacturers in Oklahoma. The neutral oil movement largely confined to the 200, 3 color stock is fair. The reduction in Pennsylvania crude oil prices was a disturbing factor in the lubricant market last week.

Orders for wax are confined to regular domestic customers. The prevailing export price would net Oklahoma refiners at their plants about 2 cents a pound for 124-126 material.

SAFETY SUGGESTIONS ON HYDROGEN SULPHIDE

(Continued from Page 181)

This is accomplished by the use of a control head and oil saver, to which is attached a gas line. A partial vacuum is maintained on the line by the use of a steam jet. This system removes practically all of the dangerous gas from the vicinity of the drilling rig. Wherever possible men should work on the windward side of the well and have gas mask protection always available. Men should wear a hose mask equipped with a blower when working in cellars, inside of tanks, or other confined places where high concentrations of hydrogen-sulphide gas may occur, and they should not enter these places without a safety belt and life line, and it has been found beneficial to use gas-tight goggles on producing wells while pulling rods or tubing. There have been hundreds of cases of gassed eyes from coming in contact with hydrogen sulphide in low concentrations around drilling rigs. Canister-type gas masks should be worn when gauging tanks and other places where low concentrations of hydrogen-sulphide gas exist.

All men who are called upon to wear gas masks, either the canister or hose type, should be thoroughly instructed in the use of them. I know of one case where a man was trying to wear a gas mask over a cap. The cap had ear flaps on it and the consequence was the man had very little if any protection. In another case the man was wearing the gas mask while chewing tobacco and, of course, had to pull the mask off every time he wanted to spit.

The dangerous places where hydrogen-sulphide gas may be encountered in the pipe line department are when gauging tanks, cleaning tanks, repairing leaks and breaks of lines, leaks of manifolds and pumping houses. Gas masks should be used in all of the above-mentioned places. There is probably more danger in handling high sulphur crudes and their distillates in the refinery than there is in any other division of the petroleum industry. Our company has adopted a set of safety rules to be observed when running these crudes.

Sodium Carbonate Method for Determining H_2S in Crudes and Their Distillates

To 50 cc. of the sample 10 cc. of a 5 per cent $Na2CO_3$ solution are added. The mixture is shaken vigorously and allowed to settle. The sodium carbonate lower layer is drawn off into a suitable beaker. The separatory funnel should be washed twice with 50 cc. of water and the washings added to the above. The contents of the beaker are then diluted to 500 cc. and the methyl orange indicator is added. The mixture is then acidified with a 50 per cent acetic acid solution, starch indicator added and is then titrated with N/10 of I_2. In case the iodine titration is less than 2 cc., N/100 I_2 should be used.

All results should be calculated in cubic feet of H_2S per 100 gallons of distillate. This method is applicable to all gasolines and other distillates up to and including light gas oil.

Heavy gas oils, crudes, etc.—50 cc. of sample is dilutel with 1-3 parts of a light solvent naphtha or any suitable sweet naphtha free from H_2S. The procedure is then exactly the same as the above.

N. B.—In some instances it may be found that the mixture will emulsify so readily that separation will be impossible. In such cases, add 10 cc. of a saturated Na_2SO_4 solution and proceed as before.

The cleaning of storage tanks that have contained high sulphur crudes and their distillates is one of the most hazardous operations in connection with handling this class of oil, and our company has made rules with reference to this work.

Second Angle

There is a second angle to the hydrogen-sulphide question. This is the hazard involved by the chemical nature of the gas and its tendency to react with iron to form iron sulphide. Everyone is familiar with the blackening of lead paints which occurs where the concentration of hydrogen sulphide in the air is high. This is due to the formation of lead sulphide. In like manner iron and iron oxide are both attacked by the gas to form iron sulphide, which is also black. If the matter stopped at the formation of iron sulphide, no particular harm would be done, but unfortunately this is not the case, for the iron sulphide readily combines with oxygen from the air and therein lies a very grave hazard. Iron oxide (or rust) and sulphur are reformed in this reaction and sufficient heat is liberated to cause the whole mass to glow, or even ignite. It will be readily appreciated that such a a state of affairs may well lead to disastrous results, since it may happen that the mass is in contact with inflammable vapors or with an explosive mixture of vapors. This is not a mere theoretical possibility as a number of tank fires have been definitely traced to this cause.

The fire hazard of iron sulphide makes it important that every possible precaution be taken when cleaning tanks which have a deposit of this compound. Fortunately iron sulphide does not oxidize readily when wet. A high pressure water hose played upon the corroded surface will not only reduce the fire hazard but will, to a large extent, remove the iron sulphide.

Resuscitation Methods

Every man who is called upon to work where hydrogen-sulphide gas may be present should be thoroughly instructed in the Schaffer-prone-pressure method of artificial respiration. The application of artificial respiration by fellow employes is the one and only chance that a man has to be brought back to life. Without breathing, he cannot wait long enough for a physician to arrive. In addition to artificial respiration, the patient should be given oxygen. All locations where there is danger of asphyxiation should be provided with inhalators and a tank of oxygen mixed with carbon dioxide. If the supply of such gas is inadequate, oxygen from a welding drum can be used.

In closing I wish to quote from a paper prepared by Dr. C. M. Aves, medical director of the Humble Oil & Refining Co., read at the National Safety Congress last year:

"In closing I wish to add my plea to that of many others, that in this form of asphyxia, as in all others, in drowning and electric shock, it must be remembered that a considerable number of those apparently dead can be resuscitated. Minutes at the time of rescue are extremely precious, for it is then only that respiration can be started again. The lives of these men are saved by one means alone and that is the immediate artificial breathing administered by his fellow workmen."

CALIFORNIA STANDARD UTILIZES FLUE GASES

(Continued from Page 182)

valve closes instantly. A connection is also made in such a manner that even partial interruption of the cooling water supply will release the steam pressure and permit the valve to close. Thus, no hot gas can possibly find its way into the cargo tanks.

Three-Way Protection

A flue gas system of the type described safeguards a tanker in three principal ways:

1. By keeping oxygen from getting into the tanks when they are emptied it insures that during the period of unloading and the return voyage empty, the tanker's compartments are so thoroughly protected that they could not be ignited even if someone deliberately plunged a flame into them.

2. During the period of loading, the vapors, instead of being pushed out through the "ullage holes" onto the deck as is the case in an ordinary tanker, can all be collected through the flue gas piping system and discharged, through the connection shown in the sketch, up and out the top of a hollow mast. This eliminates one of the most hazardous conditions of ordinary operation; for when a tanker not equipped with such a system is loaded, a constant flow of highly combustible vapor is discharged onto the deck of the ship—where workmen must walk to and fro regulating valves, getting back and forth from quarters, etc.

3. When it is desired to clean a tanker, flue gas can be blown into the bottom of the tanks through the cargo lines; and the mixture of residual petroleum vapors and flue gas discharged through the flue gas lines up the mast. By this process practically all of the petroleum vapor can be quickly swept out of the tanks; and then when the tanks are opened up to be swept out with fresh air by wind sails, there is no chance of passing through an explosive range as would be the case when fresh air flows into tanks containing straight petroleum vapors. Some of the worst tanker accidents have occurred during cleaning operations; flue gas equipped ships are effectively safeguarded against such accidents.

The first Standard Oil tanker to be equipped with this protective system was the S.S. "H. M. Storey" on which the system was put into commission in May, 1927. Six other tankers have since been similarly equipped. Despite the mechanical difficulties inherent in any such new development, the systems on all these ships have functioned as planned better than 90 per cent of the time that they have been in service; and on the basis of this experience it is expected that future installations should give very close to 100 per cent performance.

In order that any person or firm operating tank ships may have the benefit of this very effective form of protection, Standard Oil Co. is prepared to furnish without charge to anyone engaged in the construction or operation of oil tankers general drawings illustrating the design and installation of the different parts of such a system.

DISCUSS PROBLEMS OF MOTOR TRANSPOKTATION

(Continued from Page 58)

committee as suitable for papers to be prepared and presented at the annual meeting next December and the executive committee of the central group will consult with the executive committees of other groups in this same division and decide upon which topics shall receive first consideration.

Possibilities of Aluminum

The matter of using aluminum in the construction of truck tank bodies was discussed at some length and it was the consensus of opinion of the members of the meeting that this metal presents many possibilities and they are very anxious to have a report from the committee appointed by the National Fire Prevention Association and to this end a letter was authorized addressed to the National Fire Prevention Association asking its assistance in securing a prompt report upon its findings based upon tests to be made.

In the meantime several companies are actually using trucks with aluminum tanks and they report that so far this equipment has given first-class satisfaction in every respect, rumors to the contrary notwithstanding. Everyone present was very anxious to learn more about the use of aluminum tanks for trucks and it is planned to have further discussion and report on progress made at the September meeting of the central group.

Tuesday's Session

The session Tuesday took up the discussion of subjects that were left over from Monday's meeting, covering trailers and tandem equipment, dual duty rear drive, the Hoover code, factory discounts and dual and balloon tire equipment.

Chairman Fike read a telegram received from the chairman of the eastern group advising that it would hold a meeting at French Lick, Ind., May 26. Copy of the minutes of the central committee's meetings was requested.

The resolution prepared by a committee consisting of G. M. Wheatley, S. C. Bovell and A. L. McMillan asking that the cost of painting company emblems on automotive equipment be distributed between advertising and transport departments was adopted.

The subjects covered at the morning session on May 5 were more or less of an economic and private nature and had to do with handling of transport department accounts and methods of carrying cost of equipment on the company books. The members present received a lot of information of personal value and a free exchange of ideas and methods was indulged in and many points where various companies are not in accord in their methods were discussed.

The discussion of the uniform vehicle codes as proposed by the National Conference on Street and Highway Safety

in co-operation with the National Conference of Commissioners on Uniform State Laws and endorsed by the American Bar Association was postponed until the fall meeting as it was considered necessary to give each member an opportunity to read and consider the recommendations as set forth in the four booklets distributed at the meeting.

Fall Meeting in Tulsa

It was decided to hold the fall meeting of the central committee in Tulsa on September 2 and 3, as a majority of the members of this committee reside in or close to Tulsa and by having the meeting in that city a larger attendance will be assured. It is understood that most of the out-of-town members of this committee will be in Tulsa on Labor Day, September 1, as guests of the local members.

The B. F. Goodrich Rubber Co. tendered a dinner to the members at the Mayo Hotel on Monday evening that was well attended and on Tuesday noon the Leland Equipment Co. served a luncheon at its warehouse and display rooms to the group. There were about 45 men at this luncheon as the attendance at Tuesday's meetings was somewhat larger than on Monday.

After the luncheon a number of special and standard trailer jobs were examined and details of construction discussed. This discussion had been deferred until this time from the morning session in order that equipment might be examined as the various points of mechanical detail were gone over.

The afternoon session was devoted to discussion of several problems confronting the transportation men in handling equipment for the production department of the oil companies and details of loading and distribution of weight over the wheels of the truck and trailer brought out.

In closing the meeting Chairman Fike thanked the members of the committee for the interest shown in the various subjects brought up for consideration and urged them all to make plans to be present at the fall meeting in Tulsa and come prepared to recommend papers to be prepared and presented before the annual meeting at Chicago in December, also ready to give their views upon the proposed national vehicle laws, for it is hoped that by bringing to bear the concerted action of this group through the American Petroleum Institute many of the unsatisfactory conditions regarding difference in weight of loads and speeds in adjoining states can be eliminated.

ATLANTIC LOBOS OIL CONSIDERING TEXAS

PHILADELPHIA, Pa., May 5.—The loss amounting to $13,623,403 after all deductions reported for 1929 by Atlantic Lobos Oil Co., affiliated with Atlantic Refining Co., is explained by abandonment of the Hacienda of the Aguada, in Mexico. This called for write-off of $13,194,849 for leaseholds abandoned and cost of drilling and development. The net loss reported for 1928 was $170,015.

The company is investigating the possibility of carrying on operations in other fields outside of Mexico. Surveys have been made of the situation in various fields, such as Oklahoma, Kansas, Michigan, the old Bradford (Pennsylvania) fields and Southwest Texas, radiating out of San Antonio.

"It would appear," says J. W. Silveira, secretary, in the annual report, "that the latter district offers more chances and possibilities for initiation of work on a small scale compatible with the funds available to the company than any of the others, and consequently a more intensive study of this area is currently in progress. If and when the investigations develop to a point where, in the opinion of directors, actual investment of the company's funds is warranted, such investments will be made."

In withdrawing from Mexico, the company sold its remaining production from lots Nos. 148 and 199 in Amatlan district to Mexican Eagle Oil Co. for consideration of $205,000 cash on July 7, 1929. All remaining salable material was sold, the company realizing $66,507.

OPTIMISTIC OUTLOOK FOR FUTURE OF GASOLINE TANK WAGON PRICES

On May 1 the average gasoline tank wagon price took a definite turn upward according to The Oil and Gas Journal's survey of retail gasoline prices covering 50 scattered cities in the United States. Over the first quarter of this year slight reductions were shown in the average each month until it reached 14.26 cents on April 1. This was the lowest shown for more than two years and was more than a half cent below the average a year ago. However, by May 1, nearly all of this year's loss was recovered and the average now is slightly more than one-quarter cent above a year ago.

The improvement is the result of a general advance in practically all sections of the United States. The general advance in the Standard Oil Co. of New York territory on April 9 led the numerous other general advances. An important advance, amounting to 1 cent, was made April 12 in the Standard Oil Co. of Indiana territory. A similar advance was then posted throughout the southeastern states on April 22 and an adjustment of prices upward was made along the Pacific Coast on the same day.

The retail market was more firmly established at the higher level of prices in the interior than in the coastal states but stability was lent the California situation by the Standard Oil Co. posting higher tank wagon prices throughout its marketing territory and equalizing the price on tank truck purchases by allowing a 6-cent discount instead of a 4-cent discount as previously. This was soon followed by the same company posting a price at which it would buy U. S. Motor refinery gasoline on the open market for export delivery and thus the refinery market was stabilized. These factors have aided in developing confidence in the markets along the Gulf Coast and along the Atlantic and as the season of greater consumption is approached, greater optimism is apparent in viewing the future of the retail market in all sections.

TANK WAGON PRICES EXCLUSIVE OF TAX IN 50 REPRESENTATIVE CITIES

	Prices Apr. 1	Price changes April		Prices May 1	High and low 1929		High and low 1928		Tax May 1
Birmingham, Ala.	15.0	15 16.0	....	16.0	18.0	13.0	18.0	14.0	*5.0
Phoenix, Ariz.	14.0	....	....	14.0	14.0	14.0	18.0	14.0	4.0
Little Rock, Ark.	11.0	14 13.0	....	13.0	15.0	12.0	16.0	11.0	5.0
San Francisco, Calif.	17.0	22 18.5	....	18.5	17.0	12.0	14.0	14.0	3.0
Denver, Colo.	12.0	12 13.0	....	13.0	15.0	11.0	16.0	13.0	4.0
Hartford, Conn.	13.5	9 14.5	....	14.5	18.0	16.0	18.0	16.0	2.0
Dover, Del.	15.0	....	....	15.0	17.0	15.0	18.0	16.0	3.0
Jacksonville, Fla.‡	14.0	22 15.0	....	15.0	18.0	16.0	18.0	13.0	6.0
Atlanta, Ga.‡	14.0	22 15.0	....	15.0	18.0	14.0	18.0	13.0	6.0
Boise, Idaho	18.5	....	....	18.5	20.5	17.5	20.5	19.5	5.0
Peoria, Ill.	14.2	12 15.2	....	15.2	16.2	14.2	15.2	9.0	3.0
Chicago, Ill.	14.0	12 15.0	....	15.0	16.0	14.0	15.0	14.0	3.0
Indianapolis, Ind.	14.2	12 15.2	....	15.2	16.2	14.2	15.2	10.2	4.0
Des Moines, Iowa	14.5	12 15.5	....	15.5	16.5	14.5	15.5	11.9	3.0
Wichita, Kans.	12.8	12 13.8	....	13.8	14.8	12.8	13.8	10.8	3.0
Louisville, Ky.	14.0	22 15.0	....	15.0	16.0	15.0	16.0	13.0	5.0
New Orleans, La.	10.0	15 11.0	....	11.0	13.5	10.0	14.5	10.5	*5.0
Augusta, Me.	13.8	9 14.8	29 15.8	15.8	17.0	16.0	18.0	17.0	4.0
Baltimore, Md.	13.2	....	....	13.2	16.0	14.0	16.0	15.0	4.0
Springfield, Mass.	13.5	9 14.5	....	14.5	18.0	16.0	18.0	16.0	2.0
Detroit, Mich.	14.8	12 15.8	....	15.8	16.8	14.8	15.8	11.8	3.0
Duluth, Minn.	15.5	12 16.5	....	16.5	17.5	15.5	16.5	12.5	3.0
Natchez, Miss.	13.5	15 14.5	....	14.5	16.5	14.0	16.5	12.5	5.0
Kansas City, Mo.	13.9	12 14.9	....	14.9	15.9	13.9	14.9	10.9	*3.0
Helena, Mont.	18.5	12 19.5	....	19.5	20.5	19.5	20.5	19.5	5.0
Omaha, Neb.	14.25	12 15.25	....	15.25	16.25	14.25	15.25	13.25	4.0
Reno, Nev.	21.0	22 23.0	....	23.0	20.0	18.0	18.0	18.0	4.0
Newark, N. J.	13.5	....	....	13.5	15.0	14.0	16.0	15.0	2.0
Albuquerque, N. Mex.	15.0	17 16.0	....	16.0	17.0	15.0	17.0	14.0	5.0
New York, N. Y.	12.3	9 13.3	29 14.3	14.3	18.0	14.0	18.0	17.0	2.0
Charlotte, N. C.	14.3	....	....	14.3	16.0	12.0	17.0	15.0	5.0
Fargo, N. Dak.	16.9	12 17.9	....	17.9	18.9	16.9	17.9	12.0	3.0
Cleveland, Ohio	14.0	12 15.0	....	15.0	16.0	14.0	16.0	14.0	4.0
Tulsa, Okla.	11.0	15 12.0	....	12.0	14.0	10.0	14.0	10.0	4.0
Portland, Ore.	15.5	22 19.5	....	19.5	17.5	12.5	14.5	14.5	4.0
Philadelphia, Pa.	15.0	....	....	15.0	17.0	15.0	18.0	15.0	†4.0
Providence, R. I.	12.7	9 13.7	....	13.7	18.0	16.0	19.0	17.0	2.0
Charleston, S. C.	13.3	....	....	13.3	16.0	14.0	17.0	15.0	6.0
Huron, S. Dak.	15.3	12 16.3	....	16.3	17.3	15.3	16.3	14.5	4.0
Memphis, Tenn.	12.0	15 13.0	....	13.0	15.0	11.0	16.0	12.0	5.0
Dallas, Tex.	12.0	....	....	12.0	14.0	11.0	14.0	9.0	4.0
Salt Lake City, Utah	16.5	....	....	16.5	18.5	17.5	18.5	16.5	3.5
Burlington, Vt.	13.6	9 14.6	29 15.6	15.6	17.0	15.0	18.0	17.0	4.0
Norfolk, Va.	13.3	....	....	13.3	16.0	14.0	16.0	14.0	5.0
Washington, D. C.	13.7	....	....	13.7	16.0	14.0	16.0	15.0	2.0
Charleston, W. Va.	14.5	....	....	14.5	16.0	14.0	17.0	15.0	4.0
Milwaukee, Wis.	14.1	12 15.1	....	15.1	16.1	14.1	15.1	13.1	2.0
Casper, Wyo.	14.0	12 15.0	....	15.0	17.0	15.0	16.0	14.0	4.0
Seattle, Wash.	15.5	22 19.5	....	19.5	17.5	12.5	14.5	14.5	3.0
Minneapolis, Minn.	15.2	12 16.2	....	16.2	17.2	15.2	16.2	11.0	3.0
Average price	14.26	....	....	15.22	16.70	14.26	16.54	13.54	3.79

*Includes 1-cent city tax. †Paid by dealer. ‡Jacksonville prices include one-eighth cent inspection fee, but at Atlanta one-half cent fee is not included.

AVERAGE TANK WAGON PRICES IN 50 CITIES

(Exclusive of tax)

January 1, 1928	14.29
February 1	14.33
March 1	14.71
April 1	14.81
May 1	15.02
June 1	15.22
July 1	15.29
August 1	15.74
September 1	16.04
October 1	16.34
November	16.28
December 1	15.98
January 1, 1929	16.00
February 1	15.11
March 1	14.73
April 1	14.90
May 1	14.94
June 1	15.80
July 1	16.02
August 1	15.82
September 1	15.74
October 1	16.00
November 1	15.82
December 1	15.59
January 1, 1930	15.45
February 1	15.36
March 1	14.54
April 1	14.26
May 1	15.22

Late Fields

(Continued from Page 66)

1,360 bbls. on the gauge of May 6, from the pay horizon at 2,876-2,909 feet.

Independent Oil & Gas Co.'s No. 3 Okfuska, SE cor. SW NW Section 16-6-6 flowed 760 bbls. from a total depth of 2,933 feet.

Empire Oil & Refining Co.'s No. 1 Rogers, SW cor. NW Section 9-6-6, was shut down after ripping the casing at 2,675-80 feet, where the hole filled up 1,800 feet with water.

The total production from the Konawa Pool on the gauge of May 6 was 12,939 bbls. from 46 wells, with 5 wells not on production.

Mid-Continent Petroleum Corp.'s No. 1 Ceasar, NE cor. SW SE Section 20-6-6, made 490 bbls. from the pay horizon at 2,876-81 feet.

Operations on the townsite of Earlsboro were as follows: Backon Drilling Co.'s No. 1 Townsite, NE cor. SW SW NW, Section 8-9-5, had a show of oil and gas in Simpson at a total depth of 4,308 feet. Verne Brown's No. 1 Townsite, NW cor. NE SE NW, Section 8-9-5, swabbed 280 bbls. in 18 hours. The operators plan to shoot the well in the Wilcox sand at a total depth of 4,368 feet. Eason Oil Co.'s No. 1 Townsite, NE cor. SW SE NW, Section 8-9-5, swabbed 470 bbls. Glover & Northrup's No. 1 Townsite, NW cor. SW NW, Section 8-9-5, had the Earlsboro sand at 3,507-08 feet, with a showing of oil. A. V. Kedney's No. 1 Townsite, NE cor. SW NW, Section 8-9-5, had 2,000 feet of oil in the hole from the Wilcox sand at 4,392-94 feet, and was preparing to swab. Obermeyer Oil Co.'s No. 1 Townsite, NE cor. SE NW, Section 8-9-5 was landing 6-inch casing at 3,980 feet, where a hole full of water was encountered.

The production of the Oklahoma City

Pool, on the gauge of May 6, was 104,216 bbls. from 45 wells producing, out of 217 wells completed.

Sinclair Oil & Gas Co.'s No. 1 A. H. Donnell, in approximately SE cor. NE NW, Section 23-11-3w, on a 10-acre tract a half mile west of production in the pool, on the west side, was a location.

Wirt Franklin Petroleum Corp.'s No. 1 Wright, NE cor. NW, Section 2-11-3w, had top of the Oswego lime at 6,010 feet, and was drilling deeper at 6,025 feet. The test is a semiwildcat, being more than a half mile from production in the north end of the pool. Many believe the test will develop into a commercial producer.

Indian Territory Illuminating Oil Co.'s No. 3 Emerson-Joyce, SE cor. NE NE, Section 25-11-3w, was completed last March for 75,000,000 feet of gas from the Silicious lime at 6,225 feet, and the total depth was 6,484 feet. The well started making gasoline and gauged 96 bbls May 6.

GULF COAST

HOUSTON, Tex., May 6.—The 3,700-foot sand field at Refugio added two more good producers Monday with the completion of Fox & Hefflin's No. 2 Fannie Heard and Rutherford & Traylor's No. 1 Cable. The former flowed 600 bbls. daily on chokes from sand at 3,692-3,703 feet, and the latter 700 bbls. daily on chokes with 20 feet of screen set at 3,698 feet. Union Producing Co.'s No. 2 M. F. Lambert, which will determine a possible extension of the 5,900-foot sand northeast of the field in which only one well has been completed so far, was swabbing late Tuesday showing oil from a total depth of 5,891 feet. It is 1,500 feet east of the wildcat producer, No. 1 Lambert.

NORTH LOUISIANA

SHREVEPORT, La., May 5.—Loring Oil Co.'s No. 5 Bowman-Hicks, two locations west of the Zwolle discovery well hit a break in the chalk at 3,196 feet, drilled 4 feet in, got a show of oil in the pit and is coring at 3,200 feet, approximately 600 feet deeper than the average run of completions in Zwolle. This is the first of three deep holes in that area to make any hopeful show and is one of two wells Loring is scheduled to drill to 6,000 feet, if necessary.

Pelican Natural Gas Co.'s No. 1 Louisiana Long Leaf Lumber Co., Section 4-7-11, 4 miles east of Zwolle production, pumped 30 bbls. the first 12 hours and pulled rods and tubing to deepen slightly. It had 500 feet of oil in the hole from a total depth of 2,425 feet when standardized.

Loring Oil Co.'s No. 1-A Bowman-Hicks, discovery well, which went dead a week ago is still off production after pulling and resetting 4½-inch with packer failed to help.

CANADA

CHATHAM, Ontario, May 5.—In the South Turner Valley Calmont Oils' No. 2, LSD 11, Section 20-19-2w5, has blown into production in the limestone at 4,975 feet. Early indications are that it may rank with the Home wells as a large producer.

MICHIGAN

MUSKEGON, Mich., May 6.—Two wells which bring back memories of the flush production days of a year ago have been completed in the Laketon Township area of the Muskegon oil field.

The Eureka Gas & Oil Co.'s No. 1 Fred A. Eadus, SW SE NE Section 12-10-17, Laketon Township, within a short distance of U.S. 31 and on the north side of Daniels Avenue, came in Sunday in the Upper Traverse formation. The Traverse limestone was topped at 1,660 feet and pay sands were encountered from 1,670 to 1,675, the bottom of the hole. The well makes about 300,000 cubic feet of gas. The other surprise producer is Witt & Wyant, Inc.'s No. 5 Alfred H. Fenner, SW SW, Section 11-10-17, near the west edge of the proven field. It came in at 2,052 to 2,058 feet as a 200-bbl. initial producer in the Dundee pay sands. Dundee limestone was topped at 2,040 feet at which point casing was run.

THREE CALIFORNIA TOOL MANUFACTURERS MERGE

Formation of the Globe Oil Tools Co., a new $3,000,000 California holding corporation, has been effected through a consolidation of three oil tool manufacturing concerns on the Pacific Coast. The merged companies are the H. C. Smith Manufacturing Co., of Los Nietos; the Weiman-Kammerer-Wright Co., Inc. of Hollydale, and the National Tool & Metals, Inc., of Torrance.

According to J. C. Wright, president and general manager of the new concern, all outstanding stocks of the constituent companies will be held by the new holding company, and eventually retired. It is proposed, Mr. Wright said, to eventually locate all three concerns at Los Nietos, Calif., on the property now occupied by the new modern plant recently constructed by the H. C. Smith Manufacturing Co.

The officers of the new organization include president and general manager, J. C. Wright, formerly president and general manager of the Wieman-Kammerer-Wright Co.; vice president and general sales manager, M. G. Brumley, formerly vice president and general manager of National Tool & Metals, Inc.; vice president and assistant sales manager, Edgar H. Wilson, formerly vice president and sales manager of Weiman-Kammerer-Wright Co.; and secretary-treasurer, J. S. A. Smith, secretary-treasurer of the Emsco Derrick & Equipment Co. The board of directors, in addition to the above named officers, include: H. C. Smith, president of the H. C. Smith Manufacturing Co.; E. M. Smith, president of Emsco Derrick and affiliated companies, and W. A. Trout, vice president and general manager of the Emsco Derrick & Equipment Co.

The management plans by this merger to effect greater economies in the manufacturing and distribution of all of their products. The new company will have a complete line of drilling tools, including as their major items six types of rotary drilling bits, four types of coring equipment, various types of straightreamers and underreamers, and, in addition, a number of specialties, such as safety brake attachments, float valves and eccentric straps, wire line control, drilling pipe guides, and tubing swabs. Also, the acquisition of the National Tool & Metals, Inc. will bring into the new concern a complete line of diamond-sub insert metals, hard facing, welding rods, pump pistons, casing protectors, and general electric and acetylene welding supplies.

In addition to California, all three constituent companies are operating in the Mid-Continent oil fields from their branch at Oklahoma City, and anticipate a considerable expansion in that field in the near future. These companies also have developed a good volume of trade in foreign countries, and it is their plan in the near future to send one of their representatives on a tour of all foreign oil fields.

TURMAN INJUNCTION DENIED

AUSTIN, Tex., May 6.—The power of the Railroad Commission to enforce Rule 37 was sustained by the district court here Tuesday in denying L. C. Turman an injunction to restrain the State from preventing his drilling a second well in a narrow abandoned roadway in the Darst Creek Field of Guadalupe County. Turman appealed to civil appeals court.

REDUCE VENEZUELA PRICES

NEW YORK, May 3.—Gasoline prices in Venezuela have been reduced 4 cents per gallon by both Shell and Lago, effective May 1, according to cables from Maracaibo.

PRESENT PETROLEUM ACTIVITIES OF BUREAU OF MINES ENGINEERS

By Charles E. Kern
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., May 5.—The United States Bureau of Mines now has in progress a number of studies dealing with problems of special interest to the petroleum and natural gas industry. Some of these studies which are linked with previous work that has been done by the bureau's engineers are nearing completion; others have been initiated only recently.

Safety work of the bureau in the Mid-Continent Field, begun in 1923, is being continued by E. J. Dewees who is now making a trip through the oil fields of Texas where hydrogen sulphide gas has been an outstanding hazard. Many accidents have been prevented through instruction concerning the toxicity of this gas and methods of combating it.

A study is being made of commercial methods for the manufacture of wax by Ralph H. Espach. A technical paper is being prepared covering this subject. The paper will discuss improved methods of sweating, temperature control, and economies which can be effected in wax manufacture. Another refinery study, directed by H. P. Rue, pertains to sulphur compounds in crude oil. With the aid of a visible-action continuous distillation apparatus, a new type of apparatus for laboratory study developed at the Bartlesville station, close fractionation can be obtained. This apparatus has been of much assistance in studying West Texas and other high sulphur crudes.

Oil recovery studies are being continued at Bartlesville with special reference to the flow of gas through sands of different permeabilities. Recently Joseph Chalmers gave a brief resume of results obtained in the oil recovery laboratory at a round table discussion on petroleum research at a meeting of the American Institute of Mining and Metallurgical Engineers at New York and it will shortly be published. The effort of the bureau engineers in their laboratory study of the flow of oil through sands under different repressuring conditions is to find relationships which will have practical application in the field.

Natural Gas Section

The natural gas section of the petroleum division of the Bureau of Mines is continuing its studies of the flow of natural gas through pipe lines. The preliminary results of this study are described in Serial No. 2,943 and the work is being continued by T. W. Johnson and W. B. Berwald with especial reference to flow formulas for natural gas through high pressure transmission lines. One interesting phase of this study deals with the flow of natural gas in telescopic lines. The natural gas department of the Natural Gas Association has co-operated with the bureau in the making of this study of pipe line flow. The authors are now working on a bulletin covering the results of their investigation which will include tests on pipe lines in nearly all sections of the United States.

Another study of the natural gas section now in progress deals with the methods of gauging and controlling natural gas wells. The initial work on this fundamental study is described in Serials Nos. 2,929 and 2,930, by H. R. Pierce and E. L. Rawlins. A third report on this subject is being prepared and will show the practical application and use of charts which have been developed in connection with the fundamental relationships which exist in gas wells.

The conversion of dry natural gas (methane) into benzene and other products by pyrolysis, or the chemical decomposition by the action of heat, is being studied by H. M. Smith and assistants.

The co-operative study of tank corrosion with particular reference to the behavior of aluminum tanks for holding high-sulphur oils which has been in progress in the Texas Panhandle for the past year under the direction of Ludwig Schmidt has reached a point where a report should be available on this subject some time during the coming summer.

Recently the various drilling and producing problems in the Oklahoma City Field, Oklahoma, have caused the petroleum engineers of the Bureau of Mines to undertake several studies in that area. It is hoped by the bureau that through a series of tests entailing the collection of oil and gas samples under pressure, in specially constructed bombs, information may be obtained on the quantity of natural gas contained in oil under original rock pressure in that field. This study is being made under the direction of Benjamin E. Lindsly, assisted by Gustav Wade.

It has been noted that many different types of boiler feed water heaters are being used in the Oklahoma City Pool. Greater efficiency in the use of these boilers is believed to be a step in the direction of economy and greater conservation. E. C. Reistle, Jr., is making a survey of this problem.

District Studies

All of the above studies and others are under the supervision of N. A. C. Smith, supervising engineer of the Petroleum Experiment Station, Bartlesville, Okla.

At the Dallas, Tex., office, H. B. Hill, supervising engineer, is in charge of several engineering field studies, including the Cotton Valley Field, Louisiana, the Roberts Pool, and the Salt Flat Pool, Texas. In the Roberts Pool considerable assistance has been rendered to operators in solving their problems of water encroachment. A report on the Cotton Valley Field, by J. S. Ross will soon be available.

A study of the so-called black oils of the Rocky Mountain region and particularly those of Wyoming, is in progress at Laramie, Wyo., under the supervision of K. B. Nowels. The future possibilities of this oil as a source of refined products and economical methods of refining will receive the direct attention of H. M. Thorne.

Another study at the Laramie, Wyo., office is on the thermodynamics of the flow of oil and gas in wells. Mr. Nowels is preparing a number of nomographic charts which, when completed should be of considerable assistance in arriving at reliable figures showing the amount of energy used in lifting a given quantity of oil to the surface.

At the San Francisco office of the Bureau of Mines, R. L. Marek, who recently joined the staff of the bureau, is studying safety problems in the California industry. He is now compiling figures on the fatalities in the California petroleum industry for 1929. This report will be available shortly. This annual publication will show the trends in accidents and suggest prevention work which should be of real value to the industry in reducing hazards.

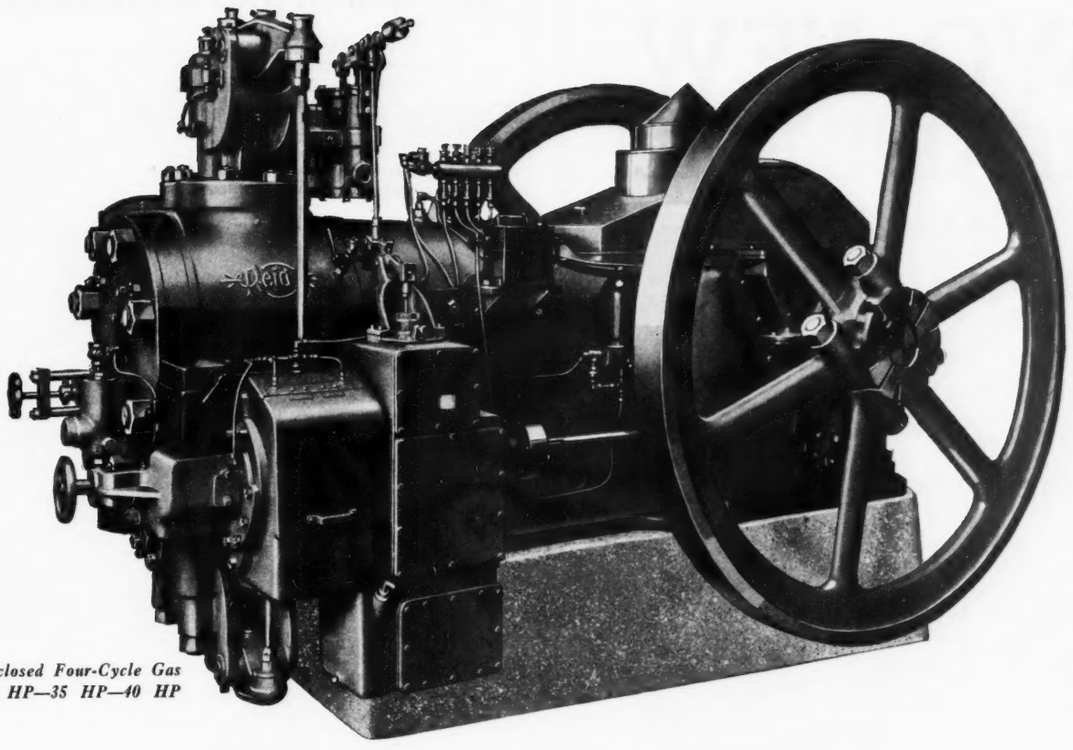
H. C. Miller is studying oil recovery problems, especially in relation to gas injection and gas storage in California fields.

Other problems being studied at the San Francisco office under the direction of C. P. Bowie, supervising engineer, deal with the transportation of gasoline in pipe lines and the fractional distillation of the heavier constituents of California crudes. Boyd Guthrie has charge of the laboratory work of the refining study.

At the Boulder, Colo., office, work is being directed to the further study of refining and treating oils produced from shale. J. W. Horne is in charge.

SLICK BUYS MORE ACREAGE

The Tom Slick Oil Co. has purchased about 25,000 acres of undeveloped oil and gas lands from L. H. Wentz. The acreage lies in Lincoln, Garfield, Oklahoma and other central Oklahoma counties. Mr. Wentz retains his rich settled production properties which lie chiefly in Noble, Logan and Kay Counties.



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NEW LOCATIONS IN TEXAS PANHANDLE AND NORTH AND WEST TEXAS FIELDS

TEXAS PANHANDLE
Week Ending April 23
Carson County

Danciger Oil & Refining Co.'s No. 1 B. F. Byrum, 990 feet south and 330 feet east of the NW cor. SW, Section 188, Block 3, I.&G.N. Survey. Empire Gas & Fuel Co.'s No. 3 W. H. Fuqua, 2,310 feet south and east of the NW cor., Section 18, Block 3, A.B.&M. Survey. Empire Gas & Fuel Co.'s No. 1 J. Whittemore, 2,310 feet south and east of the NW cor., Section 14, Block 7, I.&G.N. Survey. Red River Gas Co.'s No. 4 Lee Bivins-A, 685 feet north and 660 feet west of the SE cor. SE NE, Section 44, Block M-20, G.&M. Survey.

Gray County

Lyon and others' No. 2 J. S. Morse, 330 feet south and east of the NW cor. N half NE, Section 2, Block 26, H.&G. N. Survey. Cockrell-McIlroy Oil Co.'s No. 1 R. J. Sailor, 330 ft. south and east of the NW cor. SW NE, Section 138, Block 3, I.&G.N. Survey. Empire Gas & Fuel Co.'s No. 2 E. Hexter, at the C SE, Section 235, Block B-2, H.& G.N. Survey. Humble Oil & Refining Co.'s No. 3 Combs & Worley, 330 feet north and west of the SE cor. N half SE, Section 36, Block 3, I.&G.N. Survey. Magnolia Petroleum Co.'s No. 8 J. E. Wright, 330 feet south and east of the NW cor. S half SW, Section 13, Block 3, I.&G.N. Survey. Phillips Petroleum Co.'s No. 3 J. E. Wright (Wood), 330 feet north and east of the SW cor. N half SW, Section 13, Block 3, I.&G. N. Survey. Saulsbury and others' No. 1 B. Sheridan, 330 feet north and west of the SE cor. W half NE, Section 184, Block B-2, H.&G.N. Survey. W. A. Scott's No. 1 N. A. Cobb, 330 feet north and 425 feet east of the SW cor. N half SE, Section 184, Block 3, I.&G.N. Survey. Southern Petroleum Exploration Co.'s No. 1 Vaughn, 330 feet south and east of the NW cor. SW, Section 138, Block 3, I.&G.N. Survey. The Texas Company's No. 7 Combs & Worley, 330 feet south and west of the NE cor. S half SE, Section 36, Block 3, I.&G.N. Survey.

Hutchinson County

Badger Oil Co.'s No. 4 Tom Lewis, 1,490 feet north and 330 feet east of the SW cor., Section 18, Block L, E.L. &R.R. Survey. Daley and others' No. 1 E. Cockrell, 330 feet north and east of the southwest corner of the south 80 acres of the NW, Section 4, Block 23, B.S.&F. Survey. Holmes Brothers' No. 1 J. L. Moore, 330 feet north and east of the SW cor. N half NE, Section 125, Block 4, I.&G.N. Survey. Timms and others' No. 2 J. W. Moore, 330 feet north and west of the SE cor. N half SW, Section 21, Block M-21, T.C.R.R. Survey.

Moore County

Dalmar Oil Co.'s No. 1 Jones, 330 feet south and 990 feet west of the NE cor. NW, Section 171, Block 3-T, T.&N.O. Survey. Shamrock Oil & Gas Co.'s No. 1 R. O. C. Brumley, 330 feet north and west of the SE cor. E half, Section 360, Block 44, H.&T.C. Survey.

Wheeler County

Murchison & Fain's No. 1 Parsons, 1,195 feet south and 1,980 feet east of the NW cor. NW, Section 53, Block 23, H.&G.N. Survey. Murchison & Fain's No. 2 Parsons, at the C SE NW, Section 53, Block 23, H.&G.N. Survey. Murchison & Fain's No. 3 Parsons, at the C SW NW, Section 53, Block 23, H.&G.N. Survey. Murchison & Fain's No. 12 I. Close, at the C NW NW, Section 77, Block 23, H.&G.N. Survey. Murchison & Fain's No. 13 I. Close, at the C NE NE, Section 76, Block 23, H.&G.N. Survey. Piney Oil & Gas Co.'s No. 3 W. E. Bentley, 1,320 feet north and 330 feet west of the SE cor. E half SW, Section 42, Block 24, H.&G.N. Survey.

NORTH CENTRAL AND WEST TEXAS
Week Ending April 23
Archer County

Barnsdall Oil Corp.'s No. 14 T. B. Wilson-A, 1,650 feet north and 750 feet west of the southeast corner of its lease "A," and located in the B. J. Howard Survey, A-179. C. E. Litchfield and D. Moninger's No. 1 J. H. White, 150 feet north and 450 feet west of the SE cor. of Lot No. 8, Section 41, American Tribune New Colony Lands. L. T. Burns' No. 5 R. W. Fails, 750 feet north and 450 feet west of the southeast corner of his 30-acre lease out of R. W. Fails' 122.5-acre tract out of Section 2,419, T. E.&L. Survey. L. T. Burns' No. 6 R. W. Fails, 150 feet north and 450 feet west of the southeast corner of his 30-acre lease out of R. W. Fails' 122.5-acre tract out of Section 2,419, T.E.&L. Survey. Burns & Long's No. 2 Gus Symank, 150 feet north and east of the southwest corner of the south 20 acres of the SW, Section 11, G. P. Meade's L. M. Pasture Subdivision. Consolidated Oil Co.'s No. 5 H. F. Harmel, 450 feet south and 150 feet west of the northeast corner of the north 50 acres of the south 210 acres of Section 2,490, T.E.&L. Survey. D. O. Johnson and others' No. 1 G. B. Hamilton, 1,075 feet south and 150 feet west of the northeast corner of the G. B. Hamilton 34.5-acre tract out of Section 6, B.B.B.&C. Survey, A-1,266. Lomax & Lincoln's No. 1 M. A. Garvey, at the C, Section 54, Club Ranch Subdivision. J. H. Massie's No. 9 J. T. Richardson, 450 feet north and 150 feet east of the southwest corner of the north 20 acres of the west 40 acres of Section 14, South Anderson Ranch Subdivision, and located in Section 2,419, T.E.&L. Survey. Pandem Oil Corp.'s No. 11 J. A. Young-D, 150 feet north and 750 feet west of the SE cor. N half SE, Section 2,426, T.E.&L. Survey. Underwood Drilling Co.'s No. 1 H. L. and J. F. Ward, 600 feet south and 450 feet west of the NE cor. SW, Section 1,812, T.E.&L. Survey.

Brown County

Greene Production Co.'s No. 9 A. A. Moore, 185 feet south and 400 feet west of the northeast corner of its 52.5-acre lease out of J. A. Belvin Survey, A-1,961. Humble Oil & Refining Co.'s No. 2 E. P. and W. H. Kilgore-E, 1,800 feet south and 450 feet west of the northeast corner of the Hrs. N. B. Mitchell Survey, No. 153. Same company's No. 1 J. E. Whiteside, 830 feet south and 150 feet east of the northwest corner of the east 98 acres of the north 178 acres of J. E. Whiteside's 238-acre tract out of C. B. Baniester Survey, No. 627, A-1,756. G. P. Mitcham and others' No. 1 B. F. Terry, 350 feet north and 150 feet west of the SE cor. NE, Section 39, H.T.&B. Survey. Phillips Petroleum Co.'s No. 1 I. H. Mauldin, 660 feet north and west of the southeast corner of Seth Ingram Survey, No. 154.

Callahan County

Humble Oil & Refining Co.'s No. 2 Robert Hennessy, 1,980 feet north and 2,840 feet east of the SW cor., Section 72, B.B.B.&C. Survey. Same company's No. 1 W. E. Kennard-A, 150 feet north and west of the SE cor., Section 10, E. T.R.R. Survey. Same company's No. 1 W. E. Kennard-B, 1,600 feet north and 700 feet west of the SE cor., Section 9, E.T.R.R. Survey. Production Purchasing Co. and Campbell Oil Co.'s No. 1 M. Horn, 1,320 feet north and 1,056 feet east of the SW cor., Section 104, B.B. B.&C. Survey. M. E. Wakefield and others' No. 1 J. O. Hall, 150 feet south and 4,950 feet west of the northeast corner of Victoria County School Land Survey, No. 201.

Clay County

R. T. Belcher and others' No. 8 H. C. Evans and others, 830 feet north and 150 feet west of the SE cor. SW, Section 6, Parker County School Land, A-374. E. A. Marts and others' No. 1 W. E. Collie, 1,200 feet north and 300 feet east of the SW cor., Section 43, Orange County School Land, A-368.

Coleman County

B. Payne and others' No. 1 J. H. Freeman, at the center of the north 40 acres

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Caledonian Insurance Co.
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Camden Fire Ins. Association
Carolina Insurance Co.
Central States Fire Ins. Co.
Citizens Insurance Co.
City of New York Insurance Co.
Columbia Insurance Co.
Commerce Insurance Co.
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Commercial Union Fire Ins. Co.
Commonwealth Ins. Co.
Concordia Fire Insurance Co.
Connecticut Fire Ins. Co.
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Continental Insurance Co.
County Fire Insurance Co.
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Firemens Insurance Co.
Firemens Underwriters
Franklin Fire Insurance Co.
Girard Fire & Marine Ins. Co.
Girard Underwriters
Glens Falls Insurance Co.
Great American Ins. Co.
Hanover Fire Ins. Co.
Harmonia Fire Insurance Co.
Hartford Fire Ins. Co.
Home Fire & Marine Ins. Co.
Home Insurance Co.
Hudson Insurance Co.
Imperial Assurance Co.
Insurance Co. of North America
Insurance Co. of State of Penn.
Jersey Fire Underwriters
Lincoln Fire Insurance Co.
Liverpool & London & Globe Ins. Co.
Mechanics Insurance Co.
Mechanics Underwriters
Mercantile Insurance Co.
National Ben Franklin Fire Ins. Co.
National Fire Ins. Co.
National Liberty Ins. Co. of America
National Security Fire Ins. Co.
Newark Fire Insurance Co.
New Hampshire Fire Ins. Co.
New York Underwriters Ins. Co.
Niagara Fire Ins. Co.
North British & Mercantile Ins. Co.
Norwich Union Fire Ins. Society
Occidental Underwriters
Old Colony Ins. Co.
Palatine Insurance Co.
Patriotic Ins. Co. of America
Pennsylvania Fire Ins. Co.
Philadelphia Fire & Marine Ins. Co.
Phoenix Assurance Co.
Phoenix Insurance Co.
Providence Washington Ins. Co.
Queen Insurance Co.
Reliance Insurance Co.
Rochester Department of Great American
Royal Exchange Assurance Co.
Royal Insurance Co., Ltd.
Scotch Underwriters
Scottish Union & Nat. Ins. Co.
Security Insurance Co.
Sentinel Fire Insurance Co.
Springfield Fire & Marine Ins. Co.
St. Paul Fire & Marine Ins. Co.
Star Insurance Co. of America
Sun Insurance Office
Superior Fire Ins. Co.
Svea Fire & Life Ins. Co.
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of the west 80 acres of J. H. Freeman's 165½-acre tract out of Lewis Johnson Survey, No. 481, A-436. C. K. Wasserman and others' No. 1 William Godwin, 1,883 feet south and 510 feet east of the northwest corner of William Godwin's 289-acre tract out of J. Faxell Survey, No. 83, A-197. Lloyd Oil Corp.'s No. 9 R. G. Bartholomew, 1,365 feet north and 150 feet east of the southwest corner of William Farris Survey, No. 279. J. W. Wilmott and others' No. 1 W. H. Kingsberry, 150 feet north and 406 feet east of the northwest corner of Upton Henderson's 189.7-acre tract and located on W. H. Kingsberry's 512-acre tract out of Wharton County School Land, No. 496, A-679.

Cooke County

Danciger Oil & Refining Co.'s No. 1 Tony Truebenbach, 150 feet north and 180 feet east of the northwest corner of H. Fleitman's 55-acre tract and located in Tony Truebenbach's 603-acre tract out of Peter Davidson Survey, A-337, and Jonathan Clark Survey, A-149. Sun Oil Co.'s No. 2 J. W. Milburn, 150 feet north and 450 feet east of the southwest corner of the J. W. Milburn 80-acre tract out of the J. DeGuire Survey, A-341. Sun Oil Co.'s No. 2 J. W. Mount, 150 feet south and 1,200 feet west of the NE cor. E half, Section 11, S.P.R.R. Survey, A-976.

Eastland County

C. M. Root's No. 1 C. P. Wilson, 500 feet north and 660 feet west of the SE cor. SE NE, Section 508, S.P.R.R. Survey.

Ector County

Cosden Oil Co.'s No. 3 University-B, 2,310 feet south and 1,320 feet west of the NE cor., Section 2, Block 35, University Land. Cosden Oil Co.'s No. 1 University-C, 2,310 feet south and 440 feet east of the NW cor., Section 1, Block 35, University Land. Landreth Production Corp.'s No. 3 University-S, 330 feet south and 1,320 feet west of the NE cor., Section 2, Block 35, University Land.

Glasscock County

Amerada Petroleum Corp.'s No. 3 R. C. Coffee, 2,310 feet south and east of the NW cor., Section 22, Block 33, Township 2s, T.&P. Survey.

Jack County

O. C. Chapin's No. 1 T. E. Humphries, 450 feet south and 325 feet east of the northwest corner of the east 104 acres of S. Graves Survey, A-232.

Jones County

Phillips Petroleum Co.'s No. 1 J. N. Teaff, 990 feet north and 1,100 feet west of the SE cor., Section 38, Block 18, T.&P. Survey.

Montague County

Bridwell Oil Co.'s No. 1 M. Crownover, 175 feet south and east of the northwest corner of M. Crownover's 198-acre tract out of F. Robertson Survey, A-620. Bridwell Oil and Continental Oil Co.'s No. 8 H. C. McGaughy, 800 feet north and 794 feet east of the southwest corner of the C. Chacon Survey, A-143.

Palo Pinto County

C. Bennings' No. 1 R. C. and R. D. Hinkson, 440 feet north and 300 feet east of the SW cor., Section 81, Block 3, T.&P. Survey.

Parker County

Burgone and others' No. 1 G. W. Graybill, 159 feet north and 150 feet west of the SE cor. NE, Section 8, George Harvey Survey.

Pecos County

Dixie Oil Co.'s No. 1 J. H. Tippett, 150 feet south and 980 feet west of the SE cor., Section 539, Arnold & Barrett Survey A-3, and located in Section 61, Block 194, G.C.&S.F. Survey. World Oil Co.'s No. 1 University-D, 330 feet north and west of the SE cor. NW, Section 13, Block 18, University Land.

Shackelford County

Gilman & McMurray's No. 1 H. Herron, 150 feet north and east of the SW cor., Section 10, Block 11, T.&P. Survey. Tom James' No. 1 Morris & Buie, 150 feet north and east of the SW cor. NW NW, Section 190, Block 10, E.T. R.R. Survey. Nunn and others No. 1 B. S. Walker, 150 feet south and west of the NE cor. SW SW, Section 75, Block 13, T.&P. Survey. Roeser & Pendleton's No. 1 Morris & Buie, Section 191, 22[illegible] feet north and east of the SW cor., Section 191, Block 10, E.T.R.R. Survey. Same company's No. 1 Morris & Buie, Section 201, 200 feet north and west of the SE cor. SW, Section 201, Block 10, E.T.R.R. Survey.

Stephens County

Texas Pacific Coal & Oil Co.'s No. 7 C. Binney, 700 feet south and 350 feet west of the NE cor., Section 53, Block 4, T.&P. Survey.

Ward County

Sid Richardson and others' No. 2 G. W. O'Brien and others, 322 feet south and 1,020 feet east of the NW cor., Section 5, Block F, G.&M.M.B.&A. Survey.

Wichita County

Continental Oil Co.'s No. 6 J. L. and T. J. Waggoner-C, 200 feet south and 150 feet east of the northwest corner of Lot 8, H. George Survey, A-454. G. H. Howell's No. 4 Allen-Foster, 1,050 feet south and 750 feet east of the northwest corner of the east half of Allen-Foster's 200-acre tract out of H.T.&B. Survey, No. 1, A-129. Roden & Benton's No. 1 J. M. Honaker, 750 feet north and 150 feet west of the southeast corner of the north 100 acres of the J. M. Honaker 300-acre tract out of the J. Cole Survey, A-37.

Wilbarger County

Fain-McGaha Oil Corp.'s No. 19 W. T. Waggoner-L, 1,050 feet south and 1,055 feet west of the northeast corner of its lease "L" out of Section 31, Block 4, H.&T.C. Survey. Independent Oil & Gas Co. and Moran Drilling Co.'s No. 2 W. T. Waggoner, 150 feet south and west of the NE cor. SW NW, Section 30, Block 4, H.&T.C. Survey. L. W. Popp's No. 1 W. T. Waggoner, 150 feet south and 770 feet west of the SE cor., Section 101, Block 14, H.&T.C. Survey and located in the J. Poitevent Survey, No. 28. Staley Wynne & Co.'s No. 19 W. T. Waggoner-G, 205 feet north and 255 feet west of the SE cor. SW SE, Section 32, Block 4, H.&T.C. Survey.

Young County

Benson Brothers' No. 1 S. R. Jeffery, 150 feet north and east of the SW cor. SE, Section 52, T.E.&L. Survey. P. C. Brashear's No. 1 W. C. Leberman, 150 feet north and west of the southeast corner of the west 94 acres of the north 121 acres of Section 154, T.E.&L. Survey. Bridwell Oil Co.'s No. 2 J. B. Daniel, 150 feet south and east of the northwest corner of the north 40 acres of the SE, Section 164, T.E.&L. Survey. Cato & Hammon's No. 1 O. P. Minor, 2,021 feet south and 2,022 feet east of the NW cor., Section 157, T.E.&L. Survey and located in Block 40, ... Addition, town of Olney. G. W. Cooper and others' No. 1 Junker-Benson, 450 feet south and 150 feet west of the NE cor. NW, Section 157, T.E.&L. Survey. F. P. Cullum's No. 1 J. P. Dunnagan, 150 feet south and east of the NW cor. SW, Section 412, T.E.&L. Survey. P. K. Deat's No. 1 J. F. Barnett and others, 150 feet north and west of the SE cor. S half, Section 2,245, T.E.&L. Survey. R. P. Dorian's No. 1 J. P. Dunnagan, 150 feet south and 450 feet west of the NE cor. SE, Section 412, T.E.&L. Survey. J. M. Dunn's No. 2 S. A. Doyle, 140 feet south and 310 feet west of the NE cor. S half NE, Section 184, T.E.&L. Survey. Pat Fowler and others' No. 2 R. E. Hill, 1,380 feet south and 1,250 feet west of the NE cor., Section 195, T.E.&L. Survey. R. D. Garrett's No. 1 Dan Hargroves, 150 feet south and 450 feet east of the NW cor. NW NE, Section 283, T.E.&L. Survey.

Hunter Oil Corp.'s No. 1 Calvin, 1,724 feet south and 1,722 feet east of the NW cor., Section 157, T.E.&L. Survey. Same corporation's No. 1 Doyle, 1,331 feet south and 1,722 feet east of the NW cor., Section 157, T.E.&L. Survey, being 150 feet north and west of the southeast corner of the Doyle tract. Same corporation's No. 1 Kilpatrick-Wilson, 980 ft. south and 150 feet west of the NE cor. NW, Section 157, T.E.&L. Survey. W. H. Junker's No. 2 J. E. Boley, 150 feet south and 650 feet east of the northwest corner of the north 40 acres of the NW, Section 194, T.E.&L. Sur-

vey. Independent Drilling & Production Co.'s No. 2 J. D. Lowe, 1,150 feet south and 450 feet east of the NW cor., Section 250, T.E.&L. Survey. Moran Drilling Co.'s No. 1 J. F. Larimore, 1,257 feet south and 150 feet west of the NE cor., Section 253, T.E.&L. Survey. Morris & Dunn's No. 1 T. J. Routen, 1,394 feet south and 1,469 feet west of the NE cor., Section 24, T.E.&L. Survey. Panhandle Refining Co. and others' No. 1 J. D. Lowe, 150 feet north and 750 feet east of the SW cor. N half NW, Section 250, T.E.&L. Survey. Perkins & Cullum's No. 6 E. J. Dunagan, 1,050 feet north and 150 feet east of the southwest corner of the E. J. Dunagan 65-acre tract out of Section 157, T.E.&L. Survey. Same company's No. 7 E. J. Dunagan, 450 feet north and east of the southwest corner of the E. J. Dunagan 65-acre tract out of Section 157, T.E.&L. Survey. Perkins-Cullum and Anderson & Hunter's No. 1 Morris, 1,678 feet south and 187 feet east of the northwest corner of the E. J. Dunagan 65-acre tract out of Section 157, T.E.&L. Survey and located in Lot 9, Block 5, Dunagan Addition, town of Olney.

E. Remington's No. 2 E. M. Remington, 150 feet south and 450 feet west of the NE cor. W half NW, Section 2,248, T.E.&L. Survey. E. Remington's No. 3 E. M. Remington, 450 feet south and west of the NE cor. W half NW, Section 2,248, T.E.&L. Survey. E. R. Riggs' No. 2 B. H. Larimore and wife, 150 feet north and 450 feet west of the SE cor. W half SW, Section 2,247, T.E.&L. Survey. Riner & Omohundro's No. 2 E. C. Keith, 450 feet north and 150 feet west of the southeast corner of the north 20 acres of the east 60 acres of the south 160 acres of Section 268, T.E.&L. Survey. Smith-Archer Oil Co.'s No. 1 A. C. Watson, 150 feet south and east of the NW cor. N half NE, Section 250, T.E.&L. Survey. W. A. Stafford's No. 1 E. L. Baldwin, 150 feet north and west of the southeast corner of the south 40 acres of the W half, Section 294, T.E.& L. Survey. Union Oil Co. and others' No. 1 W. F. Keathley, 450 feet south and 150 feet east of the NW cor., Section 152, T.E.&L. Survey. Western Production Co.'s No. 1 Dr. G. B. Hamilton, 1,140 feet south and 150 feet west of the northeast corner of the Dr. G. B. Hamilton 163-acre tract out of Section 3,401, T.E.&L. Survey. C. C. Williams and others' No. 5 C. J. Taack, 150 feet south and east of the NW cor. W half SW, Section 263, T.E.&L. Survey. Wooten & Reed's No. 1 F. H. Wilson, 450 feet south and 300 feet east of the NW cor. S half, Section 1,473, T.E.&L. Survey. Atlantic Oil Producing Co. and Christie's No. 2 M. R. Jarnigan, 200 feet northeast of the southwest line and 708 feet southeast of the northwest line of the northeast 57 acres of the southwest 127 acres of W. J. Orrick Survey, A-217.

Independent Oil & Gas Co.'s No. 2 M. R. Jarnigan, 200 feet southeast of the northwest line and 200 feet southwest of the northeast line of the southwest 50 acres of W. J. Orrick Survey, A-217. Same company's No. 3 M. R. Jarnigan, 708 feet southeast of the northwest line and 200 feet southwest of the northeast line of the southwest 50 acres of W. J. Orrick Survey, A-217. Independent Oil & Gas Co.'s No. 4 M. R. Jarnigan, 200 feet southeast of the northwest line and 1,020 feet southwest of the northeast line of the southwest 50 acres of W. J. Orrick Survey, A-217. Panhandle Producing & Refining Co.'s No. 1 J. E. Morrison Co., 200 feet south and 150 feet east of the northwest corner of the east 40 acres of the J. E. Morrison 80-acre tract out of B. W. Hammond Survey, A-1,320. Roeser & Pendleton and others' No. 1 Sam Ragland, 330 feet north and east of the southwest corner of the east 91 acres of S. Ragland's 182-acre tract out of J. W. Manning Survey, A-188. Shaw Oil Corp.'s No. 2 J. Kisinger-B, 1,200 feet northwest of the northwest line of W. J. Orrick Survey, A-217, and 1,350 feet southwest of the southwest line of Section 3, B.B.B.&C. Survey, A-27, and located in John Conner Survey, A-57.

Corrections

In Archer County: Independent Drilling & Producing Co.'s No. 1 Richardson, 1,237 feet south and 320 feet east of the northwest corner of the west 60 acres of Section 17, South Anderson Ranch Subdivision.

In Coleman County: Anzac Oil Co. and others' No. 2 J. McAdams, 1,000 feet south and 1,800 feet west of the northeast corner of H. Frazier Survey, No. 244. B. D. Dozier and others' No. 1 J. P. Mathews, 1,550 feet north and 1,100 feet east of the southwest corner of the C. Raquet Survey, No. 43. O. G. Windsor and others' No. 1 Wiley McClatchey, 675 feet south and 1,470 feet west of the northeast corner of J. A. McClatchey's 260-acre tract out of the McKinney & Williams Survey, No. 90.

In Crane County: C. C. Duffey and others' No. 8 Cowden Brothers & Co., 657 feet north and 669 feet east of the SW cor., Section 18, Block X, C.C.S.D. &R.G.N.G. Survey. C. C. Duffey and others' No. 9 Cowden Brothers & Co., 1,949 feet north and 625 feet east of the SW cor., Section 18, Block X, C.C. S.D.&R.G.N.G.R.R. Survey.

In Eastland County: Texas Development Co.'s No. 1 Mrs. B. C. Lewis heirs, 225 feet north and 200 feet west of the SE cor. SW SE, Section 43, Block 4, H. &T.C. Survey.

In Young County: Fain-McGaha Oil Corp.'s No. 1 Fain-McGaha Oil Corp., 1,671 feet south and 1,209 feet west of the NE cor., Section 157, T.E.&L. Survey, being 10 feet north and east of the SW cor. Lot 4, Block 4, Dunagan Subdivision, town of Olney. T. F. Hunter's No. 2 Benson (Johnson), 1,331 feet south and 1,422 feet east of the NW cor., Section 157, T.E.&L. Survey, being 540 feet north and 450 feet west of the southeast corner of the Benson 69.5-acre tract. E. Remington's No. 1 E. M. Remington, 150 feet south and west of the NE cor. W half NW, Section 2,248, T.E.&L. Survey.

LEAK DETECTION WORK IS MADE PERMANENT

(Continued from Page 144)

present—will cause the flame to shorten and gradually be extinguished. All street openings which show the presence of gas are sampled.

It has been found from a study of approximately 8,000 samples that the content of oxygen of these samples, taken from street openings whereon the flame of the adapted safety lamp has been extinguished, was 16 per cent or less.

Method of Taking Samples

The sampler is equipped with an assembly of gas sampling equipment. Samples are taken from all street openings where faulty conditions have been found to exist. The first step in the sampling operation consists of taking the depth of the street opening by means of the weighted and insulated tape. This information is used so that an average sample may be taken at mid-depth from the street opening.

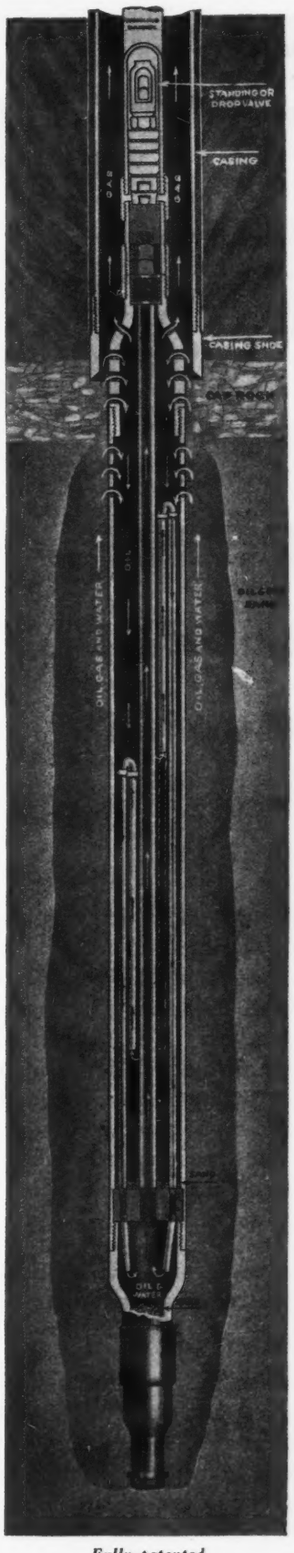
The rubber tubing is next inserted into the street opening, through one ventilating hole, and lowered to the determined mid-depth. The rubber bulb is connected to the tubing and the air is pumped therefrom by alternately compressing and expanding the bulb 50 times. Meanwhile, the aspirator tube assembly is securely inserted in the gas sampling bottle. The bulb is detached, and the rubber tubing is connected to the longer arm of the aspirator tube assembly.

Slight suction by mouth is exerted on the shorter arm of the aspirator to start the flow of water, or salt solution. The "sample" collects in the bottle as the water or salt solution discharges. When all the water or solution has been discharged, the aspirator tube assembly is withdrawn and the cork stopper is quickly inserted. The bottle, tagged and serially numbered, as per data sheet, is tested in the G-M Flamex.

The G-M Flamex is useful on the streets, in the field, or in the laboratory on samples which contains 4 or more percent of natural gas mixed with air.

Prospecting Work

Prospecting work, that is, location of



Fully patented
June 12, 1928—No. 1673663
Oct. 22, 1929—No. 173249

A POSITIVE GAS ANCHOR
CUT OIL PREVENTER
A DOUBLE SANDTRAP

FOR *positive* results put the Chancellor Separator *in your well*

The Chancellor Separator is designed to separate Gas, Water and Sand from the oil at the bottom of the well. Unlike any other tool, it is designed to do the work—and the way oil companies both large and small are reordering, demonstrates beyond doubt its success.

Used below the working barrel at the bottom of the hole, it prevents gas troubles, because it is a positive gas anchor. Completely stops the pumping of gas.

Prevents Cut Oil, by keeping the gas out of the tubing, and pumping the water separately from the oil by use of the siphon tubes. First a head of water then a head of oil is pumped through the tubing, keeping worn barrel, cut cups, and valves from emulsifying oil and water. This eliminates the treating of oil and increases the casinghead gas.

There are no working parts to wear out, will last the life of your tubing. Closed on top, cavings cannot clog the Separator, absolutely guaranteed in every way — it will pay for itself before you are invoiced. This is the result of years of experimenting by practical oil field superintendents. Now being used by most of the larger Oil Companies.

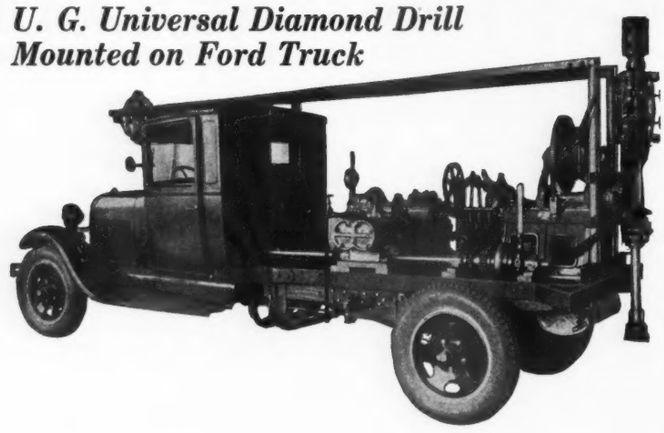
Manufactured in length of 8 feet to 16 feet, with an outside diameter of 4¼". Special sizes are made to order. We welcome your inquiries. Send for fully descriptive folder giving full details of this remarkable new member of the Miller family.

MILLER
Sand Pump Company

(Formerly known as the Miller Combination Bailer & Pump Co.)

General Offices and Plant
SAPULPA, OKLAHOMA, U. S. A.

U. G. Universal Diamond Drill Mounted on Ford Truck



Longyear

MOUNTED ASSEMBLY

for fast, accurate drilling

YOUR structure drilling and wildcat testing may be speeded up with saving of time and money by using the new Longyear mounted assembly. Rapid mobility is assured with a Ford model AA 1½ ton truck chassis while the drill is the sturdy Longyear U. G. Universal type, having a capacity of 750 feet or more of 15/16-inch core. Power is taken from the truck transmission through an exceptionally strong power take-off of our own design. The drill is equipped with a 14-foot mast with bronzed-bushed self-oiling sheave wheel and may be folded forward to a horizontal position for moving.

The unit is complete and is ready for active oil field duty, where a drill of moderate capacity that can be moved rapidly is required.

Our new Bulletin 33 describes the optional swivel heads available, pumping equipment and other details in which you are interested. Write for it to E. J. Longyear Company, Minneapolis, Minnesota, Marquette, Michigan, or our Mid-Continent branch at Ponca City, Oklahoma.

E. J. LONGYEAR COMPANY

MINNEAPOLIS ⁂ ⁂ ⁂ MINNESOTA

Longyear

gas leakage under ground, has been an outgrowth or byproduct of the inspecting work. Men who have been trained as leaders of inspecting groups are assigned to undertake the prospecting. The data sheets of an inspection are in the hands of the leader. He is therefore fully informed as to surface conditions. Generally those intersections or street sections are given first consideration where the faulty conditions seem to require prompt attention. Thickly populated locations are regarded as "choice."

The prospecting group is made up of leader and two to seven helpers. The leader not only executes the plans for prospecting, but directs the activities of the entire group. In the discharge of his duties he makes the record, draws the sketches, does the lamping, collects and tests the samples. He is at all times in close touch with the director and the laboratory and secures assistance and advice when these are required.

The helpers actually make the bar holes, lift the covers on the street opening, and operate the air compressor, if one is used, in drilling through the asphalt, brick, stone and concrete portions of the pavement or sidewalk.

Making a Location

A "faulty" manhole, gate box or curb box has been designated on the route sheet for the prospecting work. The data portray the extent of the "faulty" conditions. This street opening is arbitrarily selected as the center of activity of the prospecting group. The information gained in the inspection work is carefully rechecked by the leader. If his recheck shows a continuance and persistence of "faulty" conditions, the work is begun. Heavy traffic conditions during the daylight hours sometimes necessitate that the prospecting work be done during the night. Darkness, rain, snow and cold have been no barriers to the progress of the work of the inspecting and prospecting groups.

If the "faulty" condition is extensive in character, that is, it persists through a series of neighboring street openings, the air compressor is brought into action to drill the upper portion of the series of bar holes which has been planned. The surfacing and concrete portions of the pavement or sidewalk are thus drilled. The bar holes are completed by hand operations through the earth underneath the concrete and to a depth equal to that of the lower side of the gas line. Extreme care is always used in putting down bar holes so as to miss contact with lines and conduits. Much time is saved in using the air compressor. The time per bar hole averages three minutes while an equivalent amount of work by hand requires the time of at least three men for 20 minutes. In locations where traffic conditions are easy and there is no occasion for speedy performance of work, bar holes are drilled by hand.

Bar Holes Are "Sampled"

When the bar holes are completed, these are "lamped" and if gas is found, the sample is collected and tested, on the job, by means of the G-M Flamex. The findings with the lamp and the testing outfit serve as guides in making subsequent bar holes. Generally, the initial bar holes are made on lines north, south, east and west from the "faulty" street opening. However, there is no hard and fast rule in this procedure. The leader always exercises his best judgment in the matter.

The making of bar holes in any one direction from the "faulty" street opening is continued at intervals of 6 to 12 feet so long as samples taken from these show the presence of gas. The making of bar holes is discontinued in any one direction when two or three successively made bar holes show that these are free of gas. Usually there is a marked increase in the content of gas in the samples as the bar holes approach the region near which the leak occurs. The highest percentage of gas and the persistence of gas flow from bar hole, enable the leader to "spot" the location for excavation and repair.

The majority (75 per cent) of the street openings which have been made has confirmed the correctness of the conclusions made as the result of the prospecting work. Corroded lines, faulty sleeves, tees, ells, collars, saddles and lead caulked joints have been uncovered, and either replaced or repaired. Upon completion of repairs, conditions are rechecked by a special inspector who is independent of the prospecting group. The effectiveness of the repair work is thus determined.

Summary

1. Approximately 8,000 samples have been collected in the Greater Pittsburgh district. Some samples have shown a content of more than 10 per cent carbon dioxide. Special attention has been given to street openings, the atmosphere of which might be contaminated with gasoline vapors from crankcase oil, naphtha from cleaning establishments, vapors of benzol from by-product plants, and alcohol mashes from illicit distilling plants.

2. Approximately 115,000 street openings have been inspected in the Greater Pittsburgh district from July 28, 1928, to March 20, 1930. In 106 working days a crew of four men has taken 2,243 samples and inspected 40,967 street openings. On one large system inspecting and prospecting tests have been made, as outlined herein, with the following results: Consumers' premises, 20,193; leaks located thereon, 1,844; curb box inspections, 116,700; leaks found, 2,204; leaks repaired as result of inspection of street openings, 1,144.

3. From November 1, 1928, to October 31, 1929, a total of 3,260 major repairs were made in the Pittsburgh district.

4. In the Greater Pittsburgh district large quantities of blast furnace slag have been used as backfill either above or completely surrounding natural gas pipe lines. There has therefore been ample opportunity to learn the effects of such backfills on natural gas lines. Positive evidence of the corrosive action of slag on iron pipe, steel pipe and lead caulking has been found. The use of slag as a backfill directly over and around lines complicates and increases the likelihood of gas leakage from transmission and distribution lines, thus making a great hazard to life and to property therefrom. A study of the physical and chemical properties of slag on the one hand and of conditions as they exist underground in and around lines on the other hand amply justify this conclusion.

THEY HAD NATURAL GAS CENTURIES AGO

(Continued from Page 144)

that his attention was directed about eight years previously to what was considered to be a spring "where the water did burn like oyle and did boyle and heave like water in a pot." On investigation he found this to "arise from a strong breath, as it were, a wind which ignited on the approach of a lighted candle," and "did burn bright and vigorous."

Natural gas was discovered in other parts of the world, and in many places it was believed to be the work of a supernatural agency, and in some instances where the gas became ignited, causing continuous fire, the fire-worshipers erected temples.

Early Superstitions

The early ages were ages of superstition and these ancient people were easily mystified and terrified. In Greece one summer afternoon, centuries ago, a shepherd was tending his goats. He noticed that some of them wandered about in an unusual fashion whenever they came to a certain spot. He walked over to investigate the cause of their peculiar behavior and became affected himself from something which arose from the ground. He ran to the village and told his neighbors. They hurried back in great excitement and all had the same experience. They became talkative and light-headed. They acted queerly and their conversaton became disconnected and difficult to understand. The villagers agreed that they were in the presence of a supernatural agency and decided that a god was living there. Later

they appointed a priestess to communicate with this god and built a temple where persons might go for advice. Thus, the Oracle of Delphi became famous.

The gas at Delphi is thought to have been natural gas. This gas was found in many parts of the world, but it was many centuries before its value was understood and it was used. In some countries it was utilized to some extent during periods of more advanced civilization, but in other countries, where development of the people was not so far advanced, it mystified and frightened.

Dr. John Clayton, a Yorkshire minister with an inclination for the sciences, robbed the spirit of some of its elusive qualities and brought it within the realm of practical things by experiments conducted from 1660 to 1670. He found at Wigan what he described as a "shelly coal." Heating this coal in a closed vessel he found that a "spirit which issued out caught fire at the flame of a candle." Dr. Clayton delighted in amusing his friends with demonstrations of the use of this gas. He would collect the gas in bladders and by pricking holes in them with a pin would light the colorless gas with a candle.

Development Was Slow

But, although Doctor Clayton succeeded in producing van Helmont's "wild spirit" from coal, he, like many other research workers, failed to turn gas to practical use.

Progress in the development of gas was slow, because of the superstitions which surrounded it. Civilization had passed through the sperm oil age of lighting to the age of the wax and tallow candle, which was still the common method of illumination late in the Eighteenth Century, when William Murdock devoted himself to the task of producing gas from coal on a scale that would make possible its use for lighting. By distilling coal in an iron retort and conducting the gas through 70 feet of tinned and copper tubes, Murdock, in 1792, succeeded in lighting his home at Redruth in Cornwall.

Murdock was a construction and erection engineer for James Watt, developer of the steam engine. In 1798, he had progressed so far that he moved from Cornwall to the works of Boulton, Watt & Co., manufacturers of steam engines at the Soho foundry, where he built an apparatus on a large scale and lighted the factory with gas.

On the occasion of the celebration of the Peace of Amiens—the signing of a treaty between Great Britain with France, Spain and Holland—in April, 1802, a public display of the new light was made which attracted wide attention and comment.

Public Display in 1802

Matthews, one of the earliest writers on gas lighting, in describing this spectacle, says:

"The illumination of Soho works on this occasion was one of extraordinary splendor. The whole front of that extensive range of buildings was ornamented with a great variety of devices that admirably displayed many of the varied forms of which gas light is susceptible. This luminous spectacle was as novel as it was astonishing and Birmingham poured forth its numerous population to gaze at and admire this wonderful display of the combined effects of science and art. The writer was one of those who had the gratification of witnessing this first splendid public exhibition of gas illumination and retains a vivid recollection of the admiration it produced."

Murdock built a gas works and lighted the cotton mill of Messrs. Phillips & Lee at Manchester with 900 burners in 1804. He read a paper describing this installaton before the Royal Society of London on February 25, 1808, and was awarded the Count Rumford gold medal.

On one occasion, it is related, Murdock desired to stop the flow of gas, which was burning from an open tube, and to accomplish his purpose, he picked up a thimble and clapped it over the flaming end of the tube. The thimble had been pierced in many places and the gas coming through the holes in smaller volume was brought into contact with a greater proportion of air at the point of combustion. The result was a much better light. This incident was the origin of the "gas tip" which later came into general use.

While Murdock was conducting his experiments and demonstrations, others were also actively engaged in the effort to harness "the spirit of coal." Murdock's achievements, however, were along such practical lines that he is recognized as the father of the gas industry.

French Experiments

Jean Pierre Minckelers, after many experiments in 1874, lighted gas distilled from coal as a demonstration to his class in the University of Louvain, and three years previously Lavoisier invented a gas holder which was used instead of bladders, the common receptacle for storing gas among the early adventurers in gas manufacture.

In France, however, Philippe Lebon was the most active and successful. In September, 1799, he obtained a patent for making gas by distilling coal or wood and in 1801 lighted his home and gardens in the Rue St. Dominic, Paris.

The art of gas manufacture took definite form after Murdock had blazed the way. The demonstrations of both Murdock and Lebon attracted wide attention and praise by the press, and thus came incidentally to the attention of Frederick Albert Winsor, a German, who was destined to play a most prominent part in establishing the first gas company in the world and probably accelerating the general use of gas for domestic purposes.

Winsor, who seems to have been more of a promoter than a scientific research worker, journeyed from Frankfort to Paris, where he witnessed several times "the wondrous effects of common smoke being made to burn with greater brilliancy and beauty than wax or oil." He endeavored to learn the secret from Lebon without success.

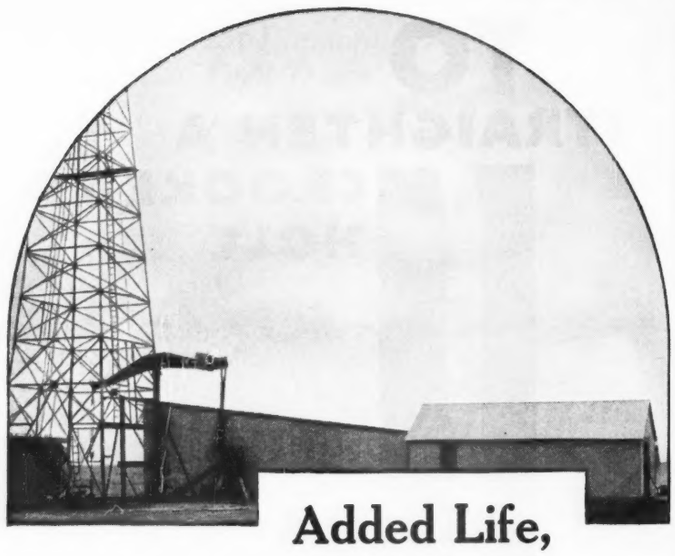
He possessed perseverance and energy, however, and the following winter exhibited at Brunswick, in the presence of reigning duke, Charles William Ferdinand, and all his court, a series of experiments demonstrating lighting with gas distilled from wood. Winsor later went to London, and there, in 1803, he began experiments and demonstrations which led to practical results.

Whether Winsor conducted his own researches and discovered a process of making gas is not known, but, having been successful in his experiments, he lost no time in pushing the invention. He delivered many lectures and was the first to advocate the distribution of gas for lighting purposes from central sources. He proposed the organization of a company for "enlightening the inhabitants of London," but he stated his claims so extravagantly that much opposition was aroused to his scheme.

First English Patent

On May 18, 1804, Winsor obtained the first English patent for gas making purposes. He gave a public exhibition of lighting the Lyceum Theater, in London, with gas, and the London Times, on July 2, 1804, printed the following description of the demonstration:

"Sir Joseph Banks, ever indefatigable in examining and promoting useful discoveries, went last Thursday evening, for the second time, with a large party of his noble and scientific friends to the Lyceum to witness the incredible effects of smoke; the whole theater was lighted with the same, in a novel and pleasing manner; the arch of lights above the stage had a very striking effect, and from the English grate on the stage (which may be fixed in every room) issued a very brilliant and fanciful light. The products of tar, ammonia and coke were produced and much approved of. Several experiments were made during the course of the lecture, such as boiling a tea kettle and melting ores in a few minutes on a table. It was also proved that a brilliant flame adapted to lighthouses could be formed, which no rain or storm could extinguish. The noble



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Circles, semi-circles and plates in corrosion-resisting copper bearing steel if desired. Three times the life of ordinary steel.

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and learned visitors, after a minute examination of the apparatus, stoves and products, expressed the liveliest satisfaction."

Winsor had a vision of the future of the gas industry, but he was confronted with a Herculean task in fighting against old-established customs and prejudices. All of his predictions regarding the utilization of gas have proven true during the last 50 years, although for many decades after he established the first gas company, gas was used only for lighting purposes. Winsor more than 100 years ago foresaw some of its present-day uses.

Predictions Came True

"Since the beginning of the world," said Winsor in one of his early appeals, "mankind has lost above 80 per cent in all combustibles by the mere evaporation of smoke. This very smoke, which often proves troublesome and dangerous to health and houses, is now discovered to contain the most valuable substances, and, if properly extracted, gathered, washed, purified and resolved, we gain no less than five costly products, viz.: oil, pitch, acid, coke and gas; which latter product not only furnishes the most intense heat and the purest light whenever it is wanted, but can also be applied to supersede the dangerous and expensive steam engines, because a celebrated French engineer proves that the azote it produces, by a mixture with the atmospheric air, is capable of tenfold power if employed at the freezing point only."

Winsor claimed that gas could be used for heating as well as lighting, and would result in a three-fourths saving in the construction of buildings because of the elimination of chimneys, stoves and other equipment used in burning other fuels.

Despite the opposition and ridicule, Winsor continued his task and succeeded in getting the support of a large and influential body of shareholders in his company, and the first public street lighting with gas took place in Pall Mall in London on January 28, 1807. This demonstration did much to expel many of the doubts existing as to the practicability of his discovery.

Winsor sought for his company the exclusive privilege of lighting by gas in all the British possessions, but such a broad charter was refused. In April, 1812, parliament granted a charter to his company, "The London and Westminster Gas Light & Coke Co.," and thus the first gas company in the world came into being.

Westminster Bridge Lighted

On December 31, 1813, Westminster Bridge was lighted with gas, and the populace of London was dumbfounded by the spectacle. It was many years before the citizens of that city became accustomed to gas lighting, although it was extended rapidly after the lighting of the bridge. People thought the flame came through the pipes and many objections were raised when the system was installed in the House of Commons. So little was known about gas that it was thought that the "pipes would burn the building," and they were set far away from the walls, and the members of Parliament, fearful of being burned, would not touch them with ungloved hands. Lamplighters at first refused, through fear, to light the new gas lamps, and later crowds followed them to watch their operations every evening.

Following the success of gas lighting in London, it spread quickly to other countries. In the United States, Baltimore was the first city to light its streets with gas in 1816, and in 1820 Paris was lighted with gas.

Little did van Helmont, working in his laboratory in Brussels, discovering the mysterious spirit which he could not imprison, think that his discovery would be the precursor of an industry which in the United States alone today represents an investment of more than $4,000,000,000.

On the manufacturing side of appliances to utilize gas there are about 570 concerns engaged, including 244 which manufacture gas ranges, 90 manufacturing hot water heaters of various kinds, 141 manufacturing space heaters for warming rooms and offices, 36 manufacturing apparatus for heating houses, and some 50 manufacturers of miscellaneous heating appliances, such as garage heaters, laundry equipment, incinerators, refrigerators, etc.

IDEAL COATING FOR PIPE IS FOOLPROOF

(Continued from Page 138)

ment. It is not enough, however, to stipulate that the coating material shall be impervious to air and moisture. It must remain that way indefinitely.

The difficulties which have been encountered up to this time in a search for the ideal coating material are probably due largely to the requirement of specification C which provides that the material shall not be brittle at 32° F., or soften so it will run or rub off at 140° F. When we find this material we will be a long way toward the solution of this difficult problem. In Colorado, our temperatures may vary from below 0° F. to 100° F. over the annual period during which time pipe must be installed. The ground temperature surrounding the installed pipe will vary from 30° F. to 70° F., which means that the coefficient of expansion of the material used for coating must be very similar to that of the steel pipe or something must stretch or break loose. The temperature differential of a single day may often make the handling and permanence of a coating extremely hazardous, but we cannot always choose the day, the hour, or the temperature when pipe is to be installed or coating applied. I imagine that our conditions are not greatly different from that of other parts of the country where pipe is coated.

Must Be Foolproof

The ideal coating must be foolproof in its application. That is to say, it is not sufficient to have a material that seems to meet every requirement of a waterproofing compound, but it must be something that is immune in so far as is possible to the weaknesses of the human element in its installation. When the American Gas Association committee summed up its 1924 report by saying that a coating can only be as good as the method in which it is applied and that the labor of application and laying of pipe will make a good coating bad or improve a poor coating, it touched the key-note of the situation. After having just completed a field inspection of all the various kinds of coated pipe laid by my company in recent years with our permanent organization, which we have always believed, and still believe is as competent as any similar organization in the country, I am in a position to say that this committee's opinion was well founded.

There must always be considered the requirement of the permanence of the protective measures employed. This must always be an economic problem dependent upon the individual conditions which are the required or anticipated usefulness of the pipe and the destructive factors to be considered. The former will usually vary with the use to which the pipe is put and the latter to the kind of soil in which it is laid. Having determined these factors to the best of our engineering ability, we must then determine how much money we can afford to spend for protection, if it is found to be a necessary or desirable requirement. Since we have not yet come to the point where we can determine in advance how long protective measures are protective, we must assume that the measures employed will make the life of the pipe perpetual.

Where Figuring Starts

The usefulness of the protective measure does not theoretically begin, however, until the life of unprotected pipe would have been ended. We are therefore justified in spending for pipe protection only that amount of money which if set aside at a determined rate of interest compounded will maintain the pipe perpetually. It will be found by a reference to

compound interest tables that unless the soil is very bad our pencils must be very sharp when this problem is attacked.

Up to this time, I probably have not added a thing to the solution of the pipe protection problem and have not written anything not already an old story to those who have given it intimate study, but the chief purpose of this paper is that of getting everybody thinking about the problem and realizing its importance. It may take the united efforts of all of us to finally devise the way, but before we can get into the proper inventive frame of mind we must come to a full realization of the importance of the problem and that it is far from being solved at this time.

In conclusion, I have one thought on the matter which persists in coming to my mind every time I think of pipe protection. I will leave this thought for what it may be worth and as perhaps my only contribution to the problem at this time. Might it not be possible that the material of which pipe is now made is not what it should be? I do not mean by this that iron should necessarily not be the base element used. Vastly more difficult problems have been met and solved than the provision of an iron pipe having all of the required characteristics of the present steel pipe and still be highly resistant or impervious to corrosion. This immediately brings to mind the various alloys of steel sold under certain trade names as noncorrosive pipe and which are now under test by the Bureau of Standards in various soils throughout the country.

Task for the Manufacturer

I do not know if our "waterproof" pipe of the future will be an alloy of steel or if it will be a steel pipe impregnated or saturated with something to make it resistant to corrosion. I do not even know if it will be steel at all. Perhaps it may be asbestos, or some similar material compressed to the necessary tensile strength. I do know, however, that it must be cheap, relatively, or we cannot afford to use it. Remember that pipe protection is necessary and important but we cannot afford to pay much for it. Compound interest is the reason for this paradox. This is an economic problem and as such will be affected by economic laws.

LARGE INDUSTRIAL BUSINESS IMPORTANT

(Continued from Page 132)

many other desirable features. But the advantages of natural gas are not all in favor of the owner of the industrial plant as the advent of natural gas into the larger industrial field has been one of the greatest progress builders in the history of industry, especially in those cities that were fortunate enough to secure this fuel. It has cleaned up cities as well as plants, has brought about better working conditions and has convinced the public that it is economically sound to the extent that millions of dollars have been invested in industrial lines alone in some of America's greatest industrial centers.

Characteristics of Prime Importance

The characteristics of large industrial business are of prime importance in the operation of the long-distance pipe line system, and, if you will allow me to diverge just a little from the discussion of the industrial itself, I shall show why it is absolutely necessary for a large pipe line system to have connected to its lines, large industrial plants that are in position to take shut-off when the gas is needed for domestic and commercial purposes. By shut-off, we mean, the ability to go to some other form of fuel, in most cases fuel oil, on short notice of one to three hours and remain on standby fuel from a half to 5 or 10 days.

A natural gas pipe line system, which has connected to its lines, thousands of domestic and house heating customers remotely located from a gas supply, are without question confronted with enormous peak load demands during a severe cold spell. It is economically impossible to construct sufficient pipe line capacity to meet a peak domestic condition and operate the investment throughout the year on an earning load factor. On the other hand, large industrial sales, on a shut-off basis, will develop an economic load factor and keep the earnings of the system in line with the investment.

During the peak load demands, the operating departments are confronted with the problem of getting their gas moving in time to catch the big consumption before their pressures get down to the danger point. It is at such times as this that the large industrial plants on their systems prove an operating resource. They can go off temporarily, on short notice, thereby making the gas formerly delivered to such plant, available for domestic consumption.

Taking an Example

As an example of how this may work out with a pipe line company supplying both domestic and industrial markets, we will assume that a company has connected to its system, a daily industrial delivery of 150,000,000 cubic feet. We will assume that 100,000,000 feet of this is going to large industrial plants located at various points along the pipe line that are in position to take shut-off. We find that we are delivering, during moderately cold weather, 100,000,000 cubic feet daily to house heating, domestic, commercial and small industrial consumers. That gives us on moderately cold days, 150,000,000 feet plus 100,000,000 feet or a load of 250,000,000 feet per day.

Our pressure department gets information from the weather bureau that a cold spell is coming and coming fast. Due to the house heating load on our line, we know that our deliveries will be increased, in 24 hours or less, to 300,000,000 cubic feet per day, or thereabouts. It is next to impossible to turn in enough additional wells and start up additional compressors to get this extra 50,000,000 feet per day to the point where it is needed most, and here is where the large industrial consumer plays an important part in our business.

We start calling the industrial plants, telling them the situation and asking them to change to other fuels until further notified, and in from five to six hours, we have from 50,000,000 to 75,000,000 feet of gas per day available right where we need it, for domestic and househeating consumers. This will tide us over until we can get our gas moving, then we can continue taking care of our domestic and househeating business without serious trouble until the cold spell lets up, at which time we again call the industrial consumers, telling them that they may go back on gas.

Failure to Co-operate Rare

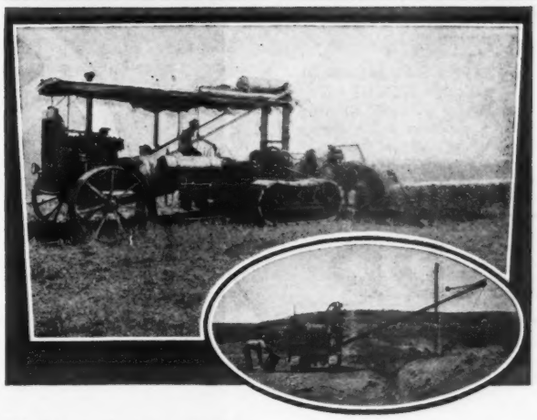
We have found only in rare instances where an industrial customer refused to go off the line, and in some cases, we have found it difficult to get them back just when we want them, although, as a whole, they co-operate with us pretty nearly 100 per cent.

I would say that 70 per cent of our large volume industrial gas is used in boilers, and for this reason, we do not experience much difficulty in getting them to take shut-off immediately when we need the gas for other purposes.

It has been necessary that I touch only the surface of the industrial business of a natural gas pipe line company, and our method of doing business might be differcnt from yours and yours might be just as good or better, but the yardstick by which we measure a successful industrial department is whether it gets the business and also if it keeps it after getting it. We have found that where we have to compete with fuel oil, it is not very difficult to secure contracts, but on the other hand, the enormous growth of the natural gas business has no doubt been one of the chief causes of the price reduction of steam coal and it is kicking back on the natural gas companies two-fold.

In conclusion, I will venture the statement, that large volume industrial business is an asset to the natural gas companies and I do not believe that any large long-distance natural gas pipe line company can operate its system successfully without large volume industrial gas connected to its lines.

Speed, Low Maintenance and Mobility – THAT'S BUCKEYE!



Model 32
***Wheel-Type* Ditcher**

A ruggedly built ditcher is Model 32—and adapted particularly to cross-country work under every practical condition for pipe line construction. Its general design appeals strongly to those favoring transmission controls.

Chief of its preferred operating features are: Practically *all-transmission* control; rigid digging wheel, grading accurately and driven from both sides to equalize pull; 16 digging speeds, ranging from 18 inches to 19 feet per minute; power steering; 71 h.p. heavy-duty Waukesha motor; Alligator (crawler) wheels with traction brakes for safe operation on grades; 15½ to 30-inch cutting widths; and 6½-foot cutting depth. Many others.

Write for Model 32 complete specifications and price.

Model F *Service* Backfiller

This little Buckeye offers remarkable economy in refilling both small main and service trenches. Measuring only 69 inches overall in width (without boom), 7 feet 6 inches in height and weighing but 4 tons, it is easily and quickly maneuvered in close quarters or transported from one job to another. "Back-action" scraper permits operating from the spoil-bank side of the trench. Traction brakes allow safe operation on grades. Ask for Model F price and specifications—both will interest you.

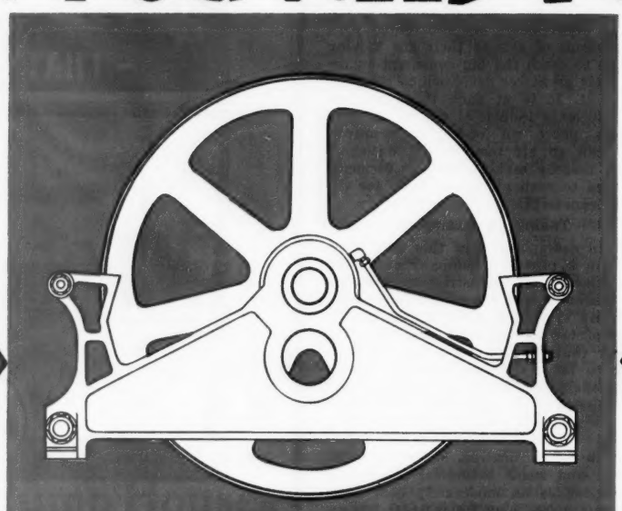
THE BUCKEYE TRACTION DITCHER CO.
FINDLAY, OHIO

There's a Buckeye Sales and Service Office near You

for over thirty years Buckeye

WHEN YOU NEED 10 LINES

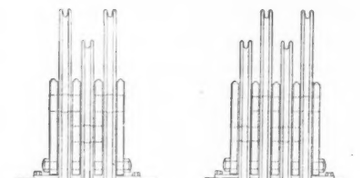
ADD



Regan Beam and Sheave

THIS

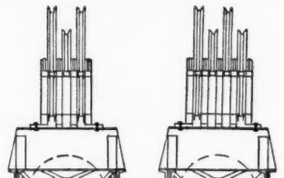
SIMPLE TO CONVERT REGAN CROWN BLOCKS



Type A upper sheave assembly showing 3 sheaves and another added, converting a 7-sheave Block into an 8-sheave.

It's safer to use 10-lines in deep drilling fields. If you are using Regan Crown Blocks you can convert into 10 lines without costly changes simply by adding another beam and sheave. Installation can be made at the top of the derrick. The 7-sheave Type A Block can be converted into an 8-sheave. The 5-sheave Type B Block can be converted into a 6-sheave.

New Bulletins describing both Blocks, now ready for distribution.



Type B upper sheave assembly showing 3 sheaves and another added, converting a 5-sheave Block into a 6-sheave.

Type A

Regan
Forge & Engineering Co.
Oil Field Equipment
Plant and General Offices:
SAN PEDRO (Los Angeles Harbor) CALIFORNIA, U. S. A.

New York Office
75 West Street
Wm. Braat, Manager

Mid-Continent Office
Dallas, Texas
501-2 Marvin Building

Representatives
Oklahoma City, Okla.
2420 W. 21st St.

Pecos, Texas
P. O. Box 444

Maracaibo, Venezuela
Wm. Adams, care Amer. Consul

Type B

Of Interest to Sales Departments

March Consumption of Gasoline Again Shows Big Increase

Gasoline consumption in 43 states for the month of February, 1930, according to the American Petroleum Institute, as indicated by reports made by wholesalers and dealers in the various states, under provisions of the gasoline tax laws or gasoline inspection laws, totaled 665,500,000 gallons, compared with 553,725,000 gallons in February, 1929, an increase of 111,775,000 gallons, or 20.2 per cent. The daily average consumption for February, 1930, was 23,768,000 gallons compared with a daily average of 21,570,000 gallons in January, 1930, an increase in daily average during February of 10.2 per cent.

The gasoline consumption in these states for the two months ending with February, 1930, amounted to 1,334,175,000 gallons, compared with 1,164,336,000 gallons for the corresponding period of 1929, an increase of 169,839,000 gallons, or 14.6 per cent.

The figures giving the quantity of gasoline sold or offered for sale, as reported follow. In some cases they are gross figures before deductions allowed for small quantities of gasoline reshipped or sold for other than taxable use, the tax upon which if paid, is subsequently refunded.

GASOLINE CONSUMPTION BY STATES, FEBRUARY, 1930

	Month of—	
	Feb., 1930 gallons	Feb., 1929 gallons
Alabama	13,073,000	11,600,000
Arizona	6,255,000	5,342,000
Arkansas	9,277,000	7,115,000
Colorado	10,358,000	8,477,000
Connecticut	12,912,000	10,769,000
Delaware	1,743,000	1,306,000
Dist. of Columbia	5,116,000	4,613,000
Florida	21,933,000	20,599,000
Georgia	16,691,000	14,109,000
Idaho	3,192,000	1,916,000
Indiana	26,490,000	23,874,000
Iowa	23,551,000	16,197,000
Kansas	25,407,000	18,139,000
Kentucky	10,189,000	7,954,000
Louisiana	13,194,000	10,784,000
Maine	3,328,000	3,199,000
Massachusetts	29,777,000	26,837,000
Michigan	47,153,000	39,173,000
Minnesota	21,257,000	13,577,000
Mississippi*	10,459,000	9,210,000
Missouri	27,112,000	21,894,000
Nebraska	14,936,000	12,645,000
Nevada	1,049,000	915,000
New Hampshire	2,890,000	2,248,000
New Jersey	32,626,000	30,322,000
New Mexico	3,668,000	2,693,000
North Carolina	20 818,000	20,891,000
North Dakota	553,000	3,500,000
Ohio	60,410,000	51,250,000
Oklahoma	21,631,000	17,885,000
Oregon	9,577,000	8,880,000
Rhode Island	5,239,000	4,259,000
South Carolina	8,350,000	7,607,000
South Dakota	7,611,000	4,558,000
Tennessee	13,643,000	10,498,000
Texas	56,171,000	47,239,000
Utah	3,517,000	2,654,000
Vermont	1,697,000	1,667,000
Virginia	13,341,000	11,250,000
Washington	15,776,000	13,829,000
West Virginia	6,948,000	5,813,000
Wisconsin	21,929,000	14,974,000
Wyoming	1,653,000	1,464,000
Total	665,500,000	553,725,000
Daily average	23,768,000	19,776,000
Increase over previous year: Amount of increase	111,775,000	
Percentage increase in daily average	20.2%	
New York	102,866,000	
	November	December
Illinois	75,367,000	63,763,000

*Estimated.

GULF REFINING EXPANSION

The Gulf Refining Co., has been credited with a very important expansion program for the present year. It has just placed an order for 1,000 additional trucks giving the Gulf Refining Co. what is stated to be the largest fleet of trucks.

OIL EXPORTS SHOW LARGE GAIN IN 1929

By Charles E. Kern

Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., May 3.—A summary of American export trade during 1929 showing quantities and values of petroleum products has been issued by the Chamber of Commerce of the United States. American export trade last year exceeded $5,000,000,000 for the second consecutive year surpassing the high mark of 1928 by $112,906,000. Last year's exports were the largest since 1920.

In third place among our principal export in commodities in 1929 are found gasoline, naphtha, etc., which, like automobiles, recorded a new mark. During the year we exported 60,000,000 bbls. of gasoline, valued at $267,000,000, 14.9 per cent higher in value and 16 per cent greater in quantity than the 1928 record.

Shipments of crude petroleum, totaling 26,394,000 bbls., valued at $37,800,000 set a new high mark, with an increase of 41.1 per cent in value and 39.2 per cent in quantity over 1928 and 43.2 per cent gain in value and 63 per cent gain in quantity over the 5-year average exports. The value of lubricating oil exported was exceeded only in 1920.

The 1929 record in both quantity and value of petroleum products follow: Gasoline, naphtha and other finished light products, 60,007,000 bbls., valued at $226,904,000; crude petroleum 26,394,000 bbls., valued at $37,800,000, and benzol 33,346,000 gallons, valued at $8,537,000. The 1929 record in quantity of mineral oils was 127,156,000 bbls.; lubricating greases 116,692,000 pounds.

Imports of crude petroleum, at lower prices, were smaller than in 1928, the quantity imported declining 1 per cent and the value 11.6 per cent. However, the 1928 figures represented record imports. During 1929 imports of gasoline, naphtha, etc., totaled 8,834,000 bbls., valued at $43,335,000, double the 1928 quantity and 38 per cent above the 1928 value. The volume represented a high mark for this commodity.

ADOPT STEEL STATIONS

The Cardinal Dixie Oil Co., independent Muskegon distributing concern, is experimenting with a new type of station for this part of the country in its new all-steel station recently opened on Lake Shore drive near Bluffton, a section of the city.

Even the roof, which appears to be made of red tile, is only brightly painted steel. The rest of the building is white trimmed in blue thus using two of the Dixie colors of yellow, blue and white. Yellow is used on the pumps from which two grades of gasoline including standard and Ethyl motor fuel are dispensed.

Steel has been used extensively for service station construction in warmer southern states but it is not known how well it will serve the purpose in the cold winter months in Michigan when stations must be heated.

CONTINENTAL SALES

The Continental Oil Co. last year sold 44.33 per cent of its domestic gasoline sales through company owned or controlled outlets and the remainder through jobber outlets. According to the company's annual report the domestic gasoline sales totaled 7,185,352 bbls. with foreign sales of 7,579,709 bbls. The company's products are now sold in 35 states, in 24 of which it has its own stations and in the remaining states jobber representation.

EXPORTS FIRST QUARTER 1930 GREATLY INCREASED

By Charles E. Kern

Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., May 5.—During the three months ending March 30, 1930, foreign demand for United States crude and refined petroleum was substantially greater than during the same period of 1929, according to a statement prepared in the Department of Commerce.

Shipments of crude petroleum totaled 5,482,604 bbls., valued at $7,278,066, during the first quarter, compared with 5,250,035 bbls. valued at $6,897,103 for the same period last year, an increase of 232,569 bbls., worth $380,963. Exports of refined petroleum aggregated 31,915,178 bbls. valued at $120,118,377 during the initial three months of this year, which is an increase of 2,357,540 bbls., or $1,592,044, over the corresponding period in 1929.

Exports of gasoline, naphtha and other light products advanced in value from $59,986,570 for the first three months of last year to $68,628,200 for the first quarter this year. Although the quantity of gas and fuel exported showed an increase of 305,434 bbls. this year, the value of the products dropped from $9,069,189 in 1929 to $8,617,394 in 1930.

The first quarter value of other petroleum shipments, all of which were below those registered during the same period last year, follows: Oils, illuminating, $19,622,756; lubricating, $22,651,469; other refined petroleum, $598,558; paraffin wax, $2,844,897.

SUN SALES INCREASE

The Sun Oil Co. is refining and selling gasoline at the rate of 30,000,000 gallons monthly with a monthly sale of lubricating oils totaling 7,500,000 gallons, according to the annual report of the company. Gasoline sales have increased 200 per cent during the past five years.

These products are sold through company owned stations or through dealers in Pennsylvania, New York, New Jersey, Delaware, Maryland, Ohio, Illinois, Michigan, Florida, Oklahoma, Texas and the New England states. About 100 warehouses and offices are maintained in these states. In addition to 9,000 independent retail distributors, the company has 500 filling stations which it owns or controls. The company also has a large export business in lubricating oils. The company's products are secured from its three refineries located at Marcus Hook, Pa., Toledo, Ohio, and Yale, Okla., with a combined capacity of 54,000 barrels of crude oil daily.

TAKE OVER OHIO PROPERTIES

The Shell Petroleum Corp., effective May 1, took over distributing properties of the Portsmouth Oil Co. located at Portsmouth, Ohio. The properties consist of one bulk station, nine service stations and dealer outlets. The stations are valued at approximately $250,000. The gallonage involved will total 2,125,000 gallons yearly. The Portsmouth company was started in 1923 as an independent jobbing concern selling Shell products.

BARNSDALL ON AIR

The Barnsdall Corp. has arranged for a series of radio programs to be broadcast each Sunday evening from 8:30 to 9 over the Columbia network of central and midwestern stations. The program will originate in Chicago and each will include a short dramatization of an event in the company's history. The first program will be broadcast May 4 and these will continue indefinitely.

DIESEL ENGINE IS NEW TAX PROBLEM

By Charles E. Kern

Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., May 3.—A bulletin prepared by Leland K. Fishback, gasoline tax collector for Indiana, calls attention to the tax problem facing the State growing out of the fact that the Diesel engine has a low fuel consumption, a Diesel-motored automobile recently being driven from Indianapolis to New York at a fuel cost of $1.38 for the 792 miles covered. This gasoline tax on the fuel used would have amounted to but 28 cents if it had been paid in Indiana although an ordinary motor would have paid a tax of at least $2.64 for the gasoline required to make the same trip. This bulletin prepared for the North American Gasoline Tax Conference of which Mr. Fishback is the secretary, shows that Deisel-motored trucks are not in operation in Indiana.

The North American Gasoline Tax Conference will hold its next meeting at Toronto, Canada, September 2-4, so that the taxing powers are given this ample notice to prepare themselves to discuss this subject at that time.

HEAD OF NIPPON SAYS OIL INTENDED FOR ALL

Special interest attaches to statistical reports of foreign nations and as is well known these reports, together with those issued in this country, are far from being uniform. Uniformity of treatment is one of the results hoped for and toward which compilers of statistics are gradually moving.

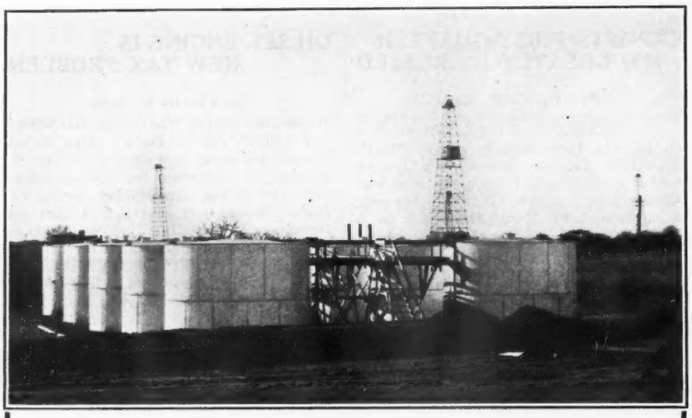
For this reason it has been noted here that Keizabino Hashimoto, president of the Nippon Oil Co. of Japan, in an article on oil consumption for power use in Japan appearing in the recent issue of the Far Eastern Review, uses a very similar approach in his market analysis as that used by Dr. John W. Frey of the Petroleum Section, Minerals Division, Bureau of Foreign and Domestic Commerce, as shown by comparison of a number of articles Doctor Frey has published during the past six months in Commerce Reports.

Mr. Hashimoto stresses, first, the consumption of gasoline and he uses as the index of consumption the number of automobiles, motorcycles and airplanes in use together with the gasoline consumption per unit of each type of vehicle. He then takes up the kind of gas oils in which he considers the number of fishing boats and oil engines in factories and mines. Under the head of heavy oil he considers the number of fishing boats and oil engines in factories and mines. Under the head of heavy oil he considers the number of Diesel engines used on both land and sea by giving the total horsepower, the Diesel engines being the principal consumers of heavy oil outside of such consumption in the Japanese navy which is treated as a military secret.

HOLD ORDINANCE VOID

The Illinois Supreme Court has held void an ordinance of the City of Kewanee covering the building of filling stations in that city. The ordinance prohibited the construction or maintenance of any filling stations where two-thirds of the buildings within a radius of 300 feet from the center of the lot on which the filling station is to be built are used exclusively for residence purposes without the written consent of a majority of the owners of all the buildings within such radius.

A Battery of Ten 1,000-Bbl. Maloneys in the Oklahoma City Field. Erected by Maloney Sales Corp., distributer.



MAKE MORE MONEY with Maloney *Vapor-Pressure* Tanks

Our Vapor-Pressure stock and flow tanks utilize the correct and economical method of lease storage—which is to operate tanks under pressures sufficient to prevent breathing.

When breathing causes rich vapors to escape into the air, the volume of the oil is reduced; and the gravity is cut as well, affecting the price. But when breathing is eliminated by use of our Vapor-Pressure tanks, the volume and gravity of the oil are maintained—you sell all the oil produced, at its well gravity.

Use the tanks that enable you to get good money for oil now wasted by evaporation.

"Alone in Quality"

MALONEY TANK MFG. COMPANY
Tulsa, Okla., U.S.A.

Distributers at All Principal Petroleum Points

Maloney A.P.I. Bolted Steel Tanks conform with A.P.I. dimensional standards and carry the official A.P.I. monogram.

MADE OF KEYSTONE AMERICAN

MALONEY PATENTED BOLTED COPPER-STEEL TANKS

MALONEY ALONE!

WILDCAT OPERATIONS IN SOUTHWEST TEXAS

(Continued from Page 165)

A. J. Keiffer et al's No. 1 B. B. Dix, 5,550 ft. W of E line, 2,775 ft. N of S line (Guadalupe River) in the Ira Nash Sur., 4 miles SE from Darst Creek ..... T. D. 2,800 ft.; fishing for stuck drill stem.

Atibus et al's No. 1 C. Martin, 268 ft. from N line, 2,650 ft. W line 210-ac. tract in the M. A. Williams Sur. ..... T. D. 1,900 ft.; drlg. in sandy shale.

Alice R. Garrett's No. 1 W. H. Cardwell, 150 ft. from SW line, 1,650 feet from SE line of Sur., 12 miles S from Gonzales, in the Byrd Lockhart Sur. ..... Dropped from report until work is resumed.

United North & South Dev. Co.'s No. 2 J. A. Kerr, 1,150 ft. S line, 750 ft. W line of tract in the A. K. Clark Sur. ..... T. D. 5,033 ft.; dry, abandoned.

Finnell & Elam's No. 1 J. F. Robinson, 3,000 ft. N line, 4,420 ft. E line, in the J. H. Livergood, 2½ miles NE from Waelder ..... T. D. 1,550 ft.; drlg. in sandy shale.

GUADALUPE COUNTY

Grayburg Oil Co.'s No. 2 Wells, 5,730 ft. E line, 2,490 ft. S line of NE cor. of Wells tract in the James D. Baume Sur., 6 miles SW from Darst Creek ..... Laying water line.

Hadley et al's No. 1 Hartwig, 2,000 ft. SN line, 930 ft. EW line of survey Wm. Hartung 656-A in the Richard Nixon Sur., 6 miles SW from Darst Creek.... Location.

Morgan Lewis et al's No. 1 Link (80 acres), 2,780 ft. E of SW line (Guadalupe River), 835 ft. from NW line of Link 80-ac. tract in the A. M. Esnaurrizar Sur., 7 miles NW from Seguin ..... T. D. 100 ft.; set surface casing.

Mid-Kansas Oil Co.'s No. 2 Waldrop, 750 ft. E from E line, 1,950 ft. from N line 330-ac. tract in the George Allen Sur., near Staples ..... Location.

Whisenant & Fowler's No. 1 M. Blumberg, 150 ft. each way from SE cor. of 128-ac. tract in the Moses Baker Sur., 1½ miles NW from McQueeny ..... T. D. 1,012 ft.; sulphur water; abandoned.

Suttle et al's No. 1 A. Baenziger, 150 ft. from SE cor. of 125-ac. tract in the A. O. Mansola Sur., 5 miles S from Seguin ..... T. D. 1,540 ft.; drlg. in Taylor marl.

Tidal Oil Co.'s No. 1 J. Seiligman, 150 ft. from N and E lines of the J. Seiligman 40-ac. NW cor. of J. H. Williamson Sur., 15 miles S from Seguin ..... Drlg. water well.

Trinity Drillers' No. 1 J. M. White, 975 ft. from NE line, 750 ft. from SE line of 166-ac. farm in the Mich Miller Sur. ..... T. D. 2,220 ft.; dry, abandoned.

JACKSON COUNTY

The Texas Company's No. 1 Ward Ranch, 1,750 ft. SE from NW cor. David Hoffman Sur. along NE line of Sur., thence at right angles 1,400 ft. SW part of county ..... Location abandoned.

The Texas Co.'s No. 1 Mitchell, 1,750 ft. E, 880 ft. N of SW corner Ewing Sur..... Rigging up.

JIM WELLS COUNTY

E. W. Ogden's No. 1 G. Farris, M. Perez Sur. ..... T. D. 2,615 ft.; shut down.

KARNES COUNTY

Hewitt et al's No. 1 H. N. Matula, 450 ft. from E and center of NW and SE lines of 125-ac. farm, in the Victor Blanco Sur. ..... Spudded in and shut down.

Harbor Oil & Gas Co.'s No. 1 W. E. Porter, 1,200 ft. from N line, 900 ft. E line of tract in the W. Blanco Sur. ..... Dropped. Duplication of Hewitt et al's No. 1 W. E. Porter.

Mundine Investment Co.'s No. 1 A. D. Wilburn, C of 143 ac. in H. K. Hardy Sur., 3 miles SE from Dunge ..... Location.

Hewitt et al's No. 1 W. E. Porter ..... T. D. 3,650 ft.; shut down.

KENDALL COUNTY

Borgett et al's No. 1 Haag, W. Avery Sur. ..... T. D. 728 ft.; csg. parted at 325 ft.

Sitten et al's No. 1 Garvin, C of NE of D. L. Richardson Sur. in the D. L. Richardson Sur., 1 mile NE from Kendalia ..... T. D. 400 ft.; sandy lime; shut down.

Dickinson et al's No. 1 Edmondson, 150 ft. from S line, 3,500 ft. from W line of tract in the J. O. Blair No. 72 Sur., 1 mile NW from Kendalia ..... Moving on.

Seaboard Oil & Gas Co.'s No. 1 W. Asken, SW cor. of Sur. in the Miguel dle Toro Sur., 3 miles N from Sisterdale ..... T. D. 1,080 ft.; drlg. in black shale.

Dixon Oil Co.'s No. 1 Ottmer Behr, W of H.T.&B.R.R. Sur., 3½ miles SE from Sisterdale ..... T. D. 1,050 ft.; setting 8-in. csg.

KERR COUNTY

Mashe & Tunstill's No. 1 Love Ranch, 1,000 ft. from W line of Sec. 1,594, 100 ft. S of S line of Sec. 1,597, in the G.C.S.D.&R.G.N.G. Sur. ..... Moving in.

KINNEY COUNTY

Lloyd Oil Co.'s No. 1 G. B. Moore, Sur. 117 ..... T. D. 3,000 ft.; abandoned.

Magnolia Petroleum Co.'s No. 1, SE cor. of Bladz Sur., near S.P.R.R., close to Blume test on Wardlow ranch, W part of county, 2½ miles from Blume .... Moving in tools.

A. Blume et al's No. 2 Herbst, 1,731 ft. W and S lines of Sur., in the Poindexter-Burns Sur. ..... T. D. 200 ft.; drlg. in lime.

Mardon Oil Co.'s No. 2 Jim Clamp, in the John Winter Sur. No. 346, near No. 1 ..... T. D. 498 ft.; shut down in chalk.

LASALLE COUNTY

Salt Lake City Pet. Co.'s No. 1 Beckwith, Sur. 17, 150 ft. S line, 150 ft. E line ..... T. D. 2,900 ft.; fishing.

LAVACA COUNTY

McElreath & Suggett's No. 1 Julius Heinshohn, 361 ft. to E, 523 ft. to S line of farm, in the G.W.&W.H. Sur. ..... T. D. 3,599 ft.; drlg. in sandy shale.

LEE COUNTY

Byrd et al's No. 1 H. L. Bastle, 1,200 ft. N and 1,000 ft. E of 80-ac. tract of Wm. Johnson ..... T. D. 3,612 ft.; shut down; hole full of water.

Texas-Louisiana Carbon Corp.'s No. 1 Bryan, in the S. F. Austin Sur., 1,200 ft. N and W of 1,200-ac. farm.. T. D. 3,380 ft.; drill stem stuck.

Todor Oil Corp.'s No. 1 H. Zsesch, in the J. Meeks Sur., 150 ft. N and 900 ft. W of S. Meeks Sur. ..... T. D. 2,000 ft.; shut down.

LIVE OAK COUNTY

Simmons Oil Co.'s No. 1 Richard Coquat, in James C. Hill Sur., 2,250 ft. to S line, 1,750 ft. to E line, 7 miles NE of Oakville ..... T. D. 4,013 ft.; shut down; awaiting orders.

Dougherty et al's No. 1 Jim Dougherty, 2,254 ft. SE of NW line, 750 ft. NE of SW line of M. Boren Sur..... Rigging up rotary.

MAVERICK COUNTY

Rycade Oil Corp.'s No. 6 Chittim, 1,455 ft. from S, 320 ft. from W of Sec. 116, Blk. 7, I.&G.N. Sur. ..... T. D. 2,636 ft.; shut down.

Rycade Oil Corp.'s No. 5 Sullivan, in C of Sec. 82, Blk. 7, in the I.&G.N. Sur. ..... T. D. 4,425 ft.; drlg. in grey lime.

MEDINA COUNTY

Pat Armstrong's No. 1 C. W. Butts, in George C. Hanson Sur. ..... T. D. 1,300 ft.; drlg.

Pan American Pet. Co.'s No. 1 Antoine Hart, in Harrison Sur. No. 799, 15 miles S from Hondo ..... T. D. 1,570 ft.; drlg.

National Oil Co.'s No. 1 Howard, 1,750 ft. E of W line, 1,854 ft. N of S line of survey in the Jno. George Sur. No. 9, 10 miles S of Dunlay..... Steel derrick.

(Continued on Page 218)

WESTCOTT & GREIS INC. W&G MEASUREMENT & CONTROL

Reliance Gas Regulators

Are Superior from the Standpoint of

CLOSE REGULATION . . . . . CAPACITY

ACCESSIBILITY . . . . . LONGEVITY

and . . . . . COST OF UPKEEP

Reliance G-C Type Vertical Regulator with Compression Spring

This regulator is featured by: the inverted vent connection; non-slip spring adjustment; and a sealing screw which can be sealed to insure against tampering with the adjustment. The vertical flanged valve provides the only inlet and outlet. These connections are furnished in various interchangeable sizes, giving engineers a very flexible range for connections and capacities.

Reliance Regulators are so expertly designed and so finely built that no gas company that has ever once thoroughly familiarized itself with their merits has ever changed to any other regulator.

Reliance "A" Type Low Pressure Appliance or House Regulator

This regulator is designed primarily for use on low pressures, not exceeding two pounds or equivalent in inches of water or mercury.

It is a dead weight type, with the weight chamber very accessible for adjustment for varying outlet pressures. On account of its frictionless construction and differential tube, the outlet pressure is very accurately controlled and uniformly maintained with a large variation of inlet pressure and flow.

As experienced specialists in the measurement and control of liquids and gases in the petroleum industry, WESTCOTT & GREIS, INC., are prepared to assist customers in the solution of measurement and control problems and to recommend and furnish exactly suitable equipment.

METRIC METAL WORKS, Meters—G. M. DAVIS REGULATOR CO., Valve Specialties, Regulators and Control Devices —CHAPLIN-FULTON MFG. CO., Regulators — MERIAM COMPANY, Manometers, Gauges, Flow Meters, etc.— D. McDONALD & CO., Laboratory and Testing Apparatus—BRISTOL COMPANY, Pressure Gauges, Charts, Bulletins— CROSBY STEAM GAGE AND VALVE CO., Gages and Relief Valves. ROBINSON ORIFICE FITTING CO., Orifice Fittings.

WESTCOTT & GREIS, INC.

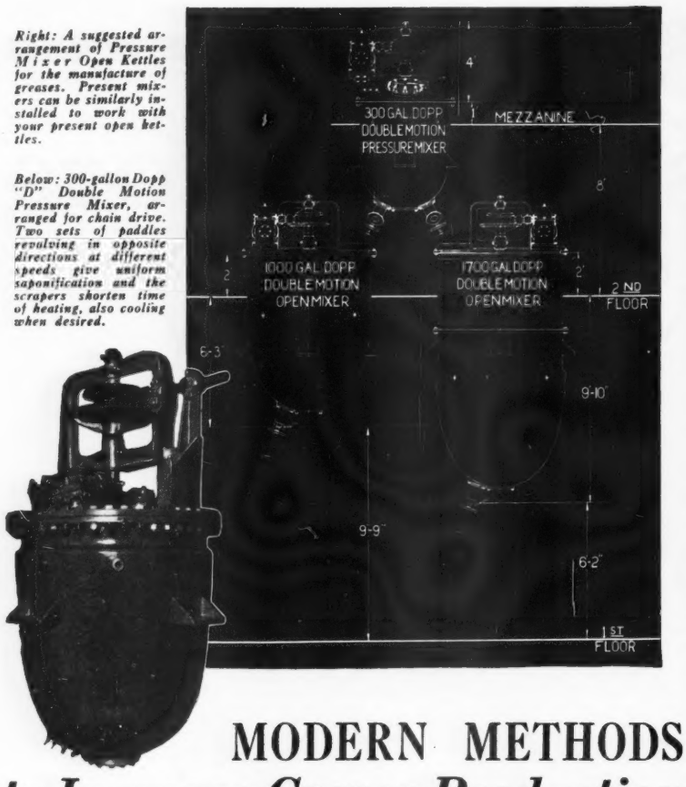
DALLAS TULSA LOS ANGELES HOUSTON

WESTCOTT & GREIS

MEASUREMENT AND CONTROL

Right: A suggested arrangement of Pressure Mixer Open Kettles for the manufacture of greases. Present mixers can be similarly installed to work with your present open kettles.

Below: 300-gallon Dopp "D" Double Motion Pressure Mixer, arranged for chain drive. Two sets of paddles revolving in opposite directions at different speeds give uniform saponification and the scrapers shorten time of heating, also cooling when desired.



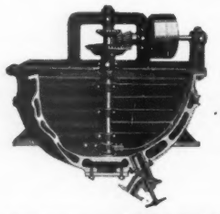
MODERN METHODS
to Increase Grease Production

MANY leading grease manufacturers who are using the pressure process for saponification have found that a relatively small investment in Dopp Mixers has enabled them to utilize their present grease making equipment to at least double its normal capacity.

By adding one Dopp pressure mixer of moderate size the capacity of a grease plant can be increased equivalent to adding several large open top mixers, yet at considerably less cost. Not only does the use of Dopp equipment result in increased output at much lower manufacturing cost but in many cases the product itself is materially improved.

The Dopp kettle insures efficient, uniform mixing under a pressure because the agitator is scientifically designed to accomplish this special purpose. Quick heating, also cooling when desired, are made possible because the inside of the kettle is scraped clean at each revolution—the smooth, seamless inside surface of the kettle and the spring scraping blades are responsible for this. The cast-in-one-piece construction prevents leaks because all seams, joints, welds, rivets and bolts are eliminated.

The facilities of our completely equipped experimental department at Buffalo are available for the use of concerns desiring to investigate the possibilities of saponifying their bases under pressure or to determine data regarding processes and equipment. We invite inquiries from those who are interested in grease production.



Cross section of Dopp Seamless Jacketed Kettle with "D" Double Motion Mixer, and outlet closing flush with inside.

SOWERS MANUFACTURING CO.

MANUFACTURERS OF DOPP EQUIPMENT FOR HEATING, COOLING AND MIXING

1302 Niagara St., Buffalo, N. Y.

NEW YORK BOSTON TORONTO

Seamless DOPP Leakless

(Continued from Page 214)

Pearson Oil Co.'s No. 5 Medina Irrigated Lands, 1,500 ft. W of E line, 1,800 ft. N of S line of survey, Lot 3, 100 ft. E of No. 4 in the J. S. Palmer Sur. ..... T. D. 922 ft.; plugging back.
Donaldson Oil & Dev. Co.'s No. 2 Adams Co., James Hillenmeyer No. 25 Sur., 500 ft. to E line of Sur., 150 ft. to S line of N half of Sur. ..... Rig up.
Pat Armstrong's No. 1 Crawford, 1,389 ft. N line, 2,550 ft. E line of Sur., 478.6 miles W from Devine ..... T. D. 400 ft.; drlg. in sandy shale.
Pure Oil Co.'s No. 1 Nick F. Fahn, in Amos Hudson Sur. No. 587, near NW line of Sur. ..... T. D. 1,800 ft.; coring lime rock; no definite information.

MILAM COUNTY

Service Oil & Gas Co.'s No. 1 Muldrow, L. Taylor Sur., SE cor. ..... Location.
Hill & Bonwell's No. 1 B. Booker, James Welch Sur. .. Fishing 2,020 ft.
Lloyd Oil Corp.'s No. 1 San Clement, Fokes Sur. ..... Spudded in.
A. H. Wray's No. 1 D. D. Fowler ..... T. D. 1,688 ft.; sidetracked; 360 ft. of drill pipe lost in hole; now drlg.

NUECES COUNTY

H. Grimm et al's No. 1 A. R. Roberts, Blk. 79, Winter Vegt. Garden Subd., 6 miles NW of Robstown, 13 miles NE Agua Dulce Field ..... T. D. 3,535 ft.; shut down; waiting on orders; contract depth.

SAN PATRICIO COUNTY

George B. Pickett's No. 1 Baldwin, 9,000 varas due E of Denton, 1,200 ft. S of the SE cor. of O'Niel Sur., Abstract 311 ..... T. D. 1,855 ft.; drlg. in hard sand.
LaFeria Oil & Gas Co.'s No. 1 C. C. Smith, in J. C. White Sur., 690 ft. to N line, 350 ft. to E line ..... T. D. 2,925 ft.; drlg. shale and boulders.

STARR COUNTY

Smith & Adams' No. 1 Welch, Perdernal Sur. ..... T. D. 841 ft.; standing.

UVALDE COUNTY

Waldrop & Welch's No. 1 H. S. Benson, 2 miles NW of Uvalde ..... T. D. 1,050 ft.; drlg. in limerock.
Waldrop & Welch's No. 1 E. R. Edmonds, 1,750 ft. NW, 7,200 ft. W of Sec. 71, in the A. Gomez Sur., 8 miles S of Uvalde ..... T. D. 750 ft.; shut down in Edwards lime.
Phantom Oil Co.'s No. 1 Claudt, Sec. 611 ..... T. D. 1,320 ft.; drlg. in lime.

VICTORIA COUNTY

Lion Oil & Ref. Co.'s No. 1 J. A. McFadden, 2,577 ft. W, 514 ft. N from NE cor. of C. O. Edwards tract in M. J. Traviesa Sur. ..... T. D. 954 ft.; set 12½-in. csg. 954 ft. W. O. C.

WILLACY COUNTY

Weimer-Richardson's No. 1 Elmore ..... T. D. 1,860 ft.; shut down in gumbo.

WILLIAMSON COUNTY

Harlem et al's No. 1 H. H. Stiles, in the J. Bevil Sur., 220 ft. N and 330 ft. E of Sur. ..... Rigging up.
Fred Beatty's No. 1 H. Bland, 450 ft. from N line, 1,000 ft. from E line of tract in the P. Coursey Sur., 1 mile E from Taylor ..... T. D. 1,176 ft.; shut down.
Fred Beatty's No. 1 J. B. Pumphrey, 1,328 ft. from S and E lines of Mrs. J. B. Pumphrey 168-ac. tract, in the W. Cartwright Sur. ..... Rigging up.
M. Bartlett et al's No. 1 R. E. Thomas, 450 ft. from N line, 170 ft. from E line of S 50 of 100-ac. of farm in the H. Owen Sur. ..... Spudded in.
E. L. Chapman's No. 2 J. H. McConnell, 1,070 ft. from W line, 150 ft. from N line of tract in the S. Miller Sur. ..... Rigging up.
Elliot et al's No. 1 S. W. Jones, 600 ft. from W line, 400 ft. from S line of Alvert Nantz Sur. ..... Spudded in.
McNeil & Peterman's No. 1 Marie Olive, 150 ft. from E line, 150 ft. from N line of 114-ac. tract in the S. Miller Sur. ..... T. D. 2,150 ft.; dry and abnd.
E. L. Chapman's No. 2 Fuchs, 150 ft. SW line, 750 ft. NW line of 93-ac. tract, in the S. Miller Sur. ..... T. D. 1,000 ft.; drlg.
G. B. Peterman's No. 2 J. C. Abbott, 450 ft. from S and W line of Abbott 100-ac. tract, in the Simon Miller Sur., SE from Thrall ..... Rigging up.
Bridwell et al's No. 1 H. L. Martin, 1,150 ft. from N line, 150 ft. from W line of Simon Miller Sur. ..... Rigging up.
McNeil et al's No. 1 R. L. Abbott, 330 ft. NW line, 150 ft. NE line of Abbott 15-ac. tract, in the S. Miller Sur. ..... Spudded in.
Powell & Kykendall's No. 1 Christian Mager, in the W. Byerly Sur., 150 ft. N and 450 ft. E of farms of 150 acres ..... Old well deepening.
E. L. Chapman's No. 3 W. Fuchs, 170 ft. from S, 753 ft. E of NW cor. of R. L. Abbott farm, or 350 ft. E of No. 2, in Simon Miller Sur. ..... T. D. 2,176 ft.; dry, abandoned.
E. L. Chapman's No. 1 Barney Lawrence, 330 ft. from SE and SW lines of farm, in the Simon Miller Sur.. Rigging up.
E. L. Chapman's No. 1 J. F. McConnell, 150 ft. from S and W of 100-ac. farm, in the Simon Miller Sur.. T. D. 1,922 ft.; serpentine; light show oil 1,900 ft.
E. R. Ertell's No. 1 J. F. McConnell, 295 ft. from N line, 180 ft. from W of S 50-ac. of 100-ac. farm, in the Simon Miller Sur. ..... T. D. 2,136 ft.; small oil show 1,100 feet.
Keeshan et al's No. 1 R. L. Abbott, 170 ft. from N line, 772 ft. from W line of farm, in the Simon Miller Sur. ..... Derrick up.
E. W. Marts et al's No. 1 R. L. Abbott ..... Spudded in.
Taylor Temple Oil Co.'s No. 1 F. M. Cain, 876 ft. from E line, 150 ft. from N line of C. D. Johnson 109-ac. tract, in the S. Miller Sur. ..... Rigging up rotary.
J. A. Thompson's No. 1 T. H. Martin, 150 ft. N and E lines of 20-ac. tract, in the S. Miller Sur. ..... Location.
Westheimer & Daube's No. 1 R. L. Abbott, 150 ft. from N and W lines of 57-ac. tract, in the S. Miller Sur... Location.
R.R. Wilder's No. 1 H. T. Martin, 158 ft. from N and E lines of H. T. Martin 76.25-ac. tract, in the S. Miller Sur. ..... Rigging up rotary.
L. W. Wilson et al's No. 1 W. L. Lawrence, 150 ft. from W line and C N and S of 35-ac. tract or 1,400 ft. from SW line, 1,450 ft. SW line of H. Owens Sur..... Spudded in.

ZAPATA COUNTY

John Pappas' No. 2 Cuellar, Por. 33 and 34 ..... T. D. 1,890 ft.; sand 1,880-90 ft.; failed to locate sand through tester; standing; show gas.
B. F. Nixon's No. 1 A. Gutierrez, 170 ft. S line, 332 ft. E line, Lot 5, Blk. 8, Partition 10, Borrego grant .... Rigging up.
National Oil Co.'s No. 1 D. B. Adams ..... T. D. 690 ft.; shut down; lack of water; making considerable gas; blowout from shallow depth while pumping for water; laying water line.

ZAVALA COUNTY

Weigand Bros.' No. 1 W. L. Gates, Hooper & Wade Sur. No. 13, 1,320 ft. S of N line, 1,220 ft. W of NE cor. Sur., about 16 miles S of Batesville ..... T. D. 2,240 ft.; shut down.
Jack Baldwin's No. 1 J. R. Price, in the W. E. Erskin Sur. No. 34 ..... Spudded in and shut down.
Southern Crude Oil Purch. Co.'s No. 1 Nat M. Washer, in the T. Pinckhardt Sur. No. 180, 1 deg. E, 6,795 ft. from SE cor. ..... T. D. 3,998; drlg. in hard shale and lime.
Ike Pryor's No. 1 Martha Campbell, 400 ft. from N line, 5,400 ft. from E cor. of Sur., Sec. 99, in the Martha Campbell Sur., 3½ miles NE from La Pryor.. T. D. 1,300 ft.; shut down.
F. Baldwin's No. 1 Washer, 300 ft. S and E of Sec. 34, in the W. E. Erskin Sur. ..... Spudded in and shut down.

LOUISIANA-ARKANSAS PROVEN AREAS

(Continued from Page 73)

Ark. Fuel Oil Co.'s No. 1 Ramsey, 557 ft. S, 330 ft. E, C, Sec. 31-23-11 ..... Began drlg. Apr. 24; cmtd. 10-in. 222 ft; drlg. 2,132 ft.

Askew & Goodman's No. 1 Roberson, 330 ft. S, 282 ft. W, NE cor. SW SW, Sec. 25-23-11 ..... Show oil and gas and S.W; T.D. 3,167 ft.

E. W. Bateman's No. 1 Bollinger, 200 ft. S, 200 ft. E, NW cor., Sec. 38-23-11 ..... Drlg. 2,200 ft.

E. W. Bateman's No. 2 Bollinger, 200 ft. S, 200 ft. W, NE cor. Lot 29, Sec. 38-23-11 ..... Location.

Del.-La. Dev. Co.'s No. 6 Bollinger, 330 ft. S, 220 ft. W, NW cor. Lot 17, in Lot 16, Sec. 31-23-11 ..... Full oil; W.O.S.R; 15 ft. broken sand; T.D. 3,217 ft.

Eylers O. & G. Co.'s No. 1 Wise, 330 ft. S, 330 ft. W, NE cor., Sec. 35-23-11 ..... Bailing; 175 ft. in hole; T.D. 3,203 ft.

Greenwood Prod. Co.'s No. 1 Bollinger, 1,980 ft. N, 1,150 ft. E, SW cor. SE, Sec. 36-23-12 ..... 300 ft. oil; S.D; W.O. 3,200 ft.

H. L. Hunt's (was Love et al's) No. 1 Allen, SE cor. NE NE, Sec. 30-23-11 ..... W.O. 3,482 ft.

H. L. Hunt, Inc.'s No. 5 J. W. Peyton, 990 ft. W. 330 ft. S. NE cor. SE, Sec. 25-23-12 ..... Location.

H. L. Hunt, Inc.'s No. 7 J. W. Peyton, 990 ft. S, 990 ft. E, C, Sec. 25-23-12 ..... Location; reported drlg. in error.

H. L. Hunt, Inc.'s No. 8 J. W. Peyton, 990 ft. E, 330 ft. S, C, Sec. 25-23-12 ..... Location.

H. L. Hunt, Inc.'s No. 9 J. W. Peyton, 330 ft. S, 330 ft. E, C, Sec. 25-23-12 ..... W.O.S.R; 100 ft. oil; T.D. 3,222 ft.

H. L. Hunt, Inc.'s No. 10 J. W. Peyton, 990 ft. S, 330 ft. E, C, Sec. 25-23-12 ..... 500 ft. fluid; W.O.S.R; 3,176 ft.

Nat. Drlg. & Prod. Co.'s (was Lide et als') No. 1 Matlock, 2,970 ft. S, 990 ft. E, NW cor., Sec. 26-23-12 .... Rig up.

La. Pet. Co.'s No. 3 Bain, Sec. 31-23-11 ..... Cmtd. 6-in. 3,130 ft; T.D. 3,271 ft.

Magnolia Pet. Co.'s No. 2 Matlock, 330 ft. S and W, NE cor. SE SW, Sec. 25-23-12 ..... Cmtd. 8⅛-in. 3,147 ft; tested 5 joints mud and oil 3,181 ft; T. D. 3,188 ft.

Magnolia Pet. Co.'s No. 3 Matlock, 330 ft. N, 330 ft. W, SE cor. SE SW, Sec. 25-23-12 ..... Drlg. hard chalk 2,452 ft.

Magnolia Pet. Co.'s No. 1 Roberson, Sec. 26-23-12 ..... Reaming for D.S. test 3,381 ft.

Nat. Gas Prod. Co.'s No. 3 U. S. Govt., 1,520 ft. S, 2,580 ft. E, NW cor., Sec. 31-23-11 ..... Location.

Nat. Gas Prod. Co.'s No. 4 U. S. Govt., 2,440 ft. S, 2,580 ft. E, NW cor., Sec. 31-23-11 ..... Location.

Phillips Pet. Co.'s No. 1 Bolin (was Phillips Pet. Co.'s No. 3 Bollinger), 390 ft. E, 236 ft. N, SW cor., Lot 16, Sec. 30-23-11 ..... S.D. 3,180 ft.

Phillips Pet. Co.'s No. 1 Floyd, 330 ft. S, 330 ft. W, C. Sec. 25-23-12 ..... Location; reported rig up in error.

The Texas Co.'s No. 1 Peyton, 660 ft. N, 330 ft. E, SW cor., Sec. 30-23-11 ..... O.W.D.D.; Comp. Feb. 19, 1928; 40,000,000 ft. gas; 2 ft. sand; T. D. 3,076 ft.; derrick.

The Texas Co.'s No. 2 Peyton, 990 ft. N, 330 ft. W, SE cor., Sec. 25-23-12 ..... W.O.S.R. 3,195 ft.

The Texas Co.'s No. 5 Peyton, 330 ft. N, 330 ft. W, SE cor., Sec. 25-23-12 ..... Derrick.

The Texas Co.'s No. 7 Peyton, 1,090 ft. N, 150 ft. E, The Texas Co.'s No. 1 Hy. Rose, 940 ft. E. 450 ft. N, C, Sec. 31-23-11 ..... O.W.D.D.; derrick; T.D. 2,680 ft.

The Texas Co.'s No. 6 Wilkinson, 1,010 ft. N, 330 ft. W, C, Sec. 36-23-12 ..... Cored 3,144-56 ft; cmtd. 6⅝-in. 3,140 ft; T.D. 3,162 ft.

The Texas Co.'s No. 7 Wilkinson, 990 ft. N, 990 ft. E, C, Sec. 36-23-12 ..... Rig up.

The Texas Co.'s No. 8 Wilkinson, 990 ft. W, 330 ft. N, SE cor. NE, Sec. 36-23-12 ..... Location.

Tippett Drlg. Co.'s No. 2 Holmes, 990 ft. S, 330 ft. W, NE cor. NW, Sec. 36-23-12 ..... Whipstocking 2,446 ft.

John Woodley et al's No. 2 L. & A., 990 ft. N, 990 ft. W, SE cor., Sec. 14-23-12 ..... W.O. 3,156 ft.

Woodley et al's No. 1 Roberson, 330 ft. N, 330 ft. W, SE cor. SW NE, Sec. 22-23-12 ..... Surface csg. collapsed; W.O; T.D. 1,500 ft.

BOSSIER PARISH—SLIGO

La. G. & F. Co.'s No. 5 Thigpen-Herold, 660 ft. S, 660 ft. E, NW cor., Sec. 13-17-12 ..... D.S. test 1,745 ft; 2,500,000 ft. gas; drlg. sand and shale 1,830 ft.

La. G. & F. Co.'s No. 6 Thigpen-Herold, 660 ft. S, 1,980 ft. E, NW cor., Sec. 13-17-12 ..... Location.

CADDO PARISH—DIXIE

D. C. Richardson's No. 1 Oden, 330 ft. S, 330 ft. W, C, Sec. 18-19-14 ..... Began drlg. Apr. 25; cmtd. 10-in. 126 ft; top Nacatoch 870 ft; drlg. 1,265 ft.

CADDO PARISH—GREENWOOD

Ark.-La. P. L. Co.'s No. 1-B Brumble, 830 ft. S, 1,280 ft. E, NW cor., Sec. 18-16-16 ..... Drlg. chalk 1,705 ft.

Calatex O. & G. Co.'s No. 2-A Agurs, 1,325 ft. S, 1,304 ft. E, NW cor., Sec. 7-16-16 ..... Cmtd. 6⅝-in. 2,409 ft; drlg. 2,720 ft.

CADDO PARISH—MOORINGSPORT

Falcon Oil Co.'s No. 4 Muslow, 200 ft. W, 1,270 ft. S, NE cor., Sec. 29-20-15 ..... Location.

CADDO PARISH—OIL CITY

Gulf Ref. Co.'s No. 26-A Levee Board, 2,440 ft. S, 200 ft. E, NW cor., Sec. 34-21-16 ..... W.O.S.R; 400 ft. oil; T.D. 1,836 ft.

Gulf Ref. Co.'s No. 27-A Levee Board, 2,005 ft. S, 200 ft. W, NE cor. NW, Sec. 34-21-16 ..... Derrick.

P. T. Mize's No. 1-A La. Oil Ref. Corp., 662 ft. N, 175 ft. E, SW cor., Sec. 6-20-15 ..... Began drlg. Apr. 23; cmtd. 10-in. 40 ft; drlg. 995 ft.

Standard Oil Co.'s No. 19 J. J. Hart, 1,305 ft. E, 1,120 ft. S, NW cor., Sec. 34-21-16 ..... Cmtd. 6-in. 1,795 ft; bailing to test 1,836 ft.

The Texas Co.'s No. 72 Levee Board, 725 ft. N, 210 ft. E. SW cor. SE, Sec. 27-21-6 ..... C.O; T.D. 1,852 ft.

The Texas Co.'s No. 73 Levee Board, 1,642 ft. E, 780 ft. N, SW cor. SW SE, Sec. 27-21-16 ..... Location.

CADDO—PINE ISLAND

Tholl Oil Co.'s No. 12 Bashara, 300 ft. S, 100 ft. W, NE cor. NW, Sec. 23-21-15 ..... Location.

DE SOTO PARISH—KINGSTON

Ark. Fuel Oil Co.'s No. 1 Mrs. C. B. Scott, 330 ft. N, 330 ft. W, SE cor. NW, Sec. 32-14-13 ..... 500 ft. S.W. 2,989 ft; drlg. 3,089 ft.

Frank Melat, Inc.'s No. 1 Schryver, 175 ft. E, 175 ft. N, SW cor. NW SW, Sec. 35-14-13 ..... Rig up.

R. O. Roy's No. 1-B Farmer, 660 ft. S, 660 ft. E, NE SW, Sec. 13-13-13 ..... Began drlg. Apr. 28; cmtd. 10-in. 103 ft.

R. O. Roy's No. 1 Mattie Fuller, 330 ft. S, 330 ft. W, NE cor. SE NW, Sec. 5-13-13 ..... Derrick.

R. O. Roy's No. 1 Lee, 660 ft. N, 660 ft. E, SW cor., Sec. 33-14-13 ..... Drlg. shale and boulders 2,100 ft.

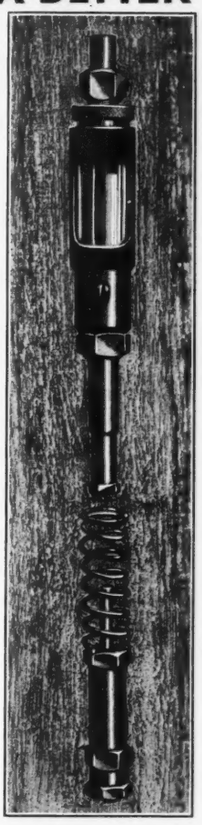
R. O. Roy's No. 1-A Parker, C SW NW, Sec. 5-13-13 .... Derrick.

R. O. Roy's No. 1-B Parker Bros., 660 ft. N, 660 ft. W, SE cor., Sec. 31-14-13 ..... Began drlg. Apr. 27; cmtd. 10-in. 104 ft.

R. O. Roy's No. 1 Whittaker, 330 ft. S, 330 ft. E, NW cor. SW NE, Sec. 5-13-13 ..... Began drlg. Apr. 27; cmtd. 10-in. 104 ft.

McCORD

A BETTER LUBRICATOR



Precision Built to Supply Better Lubrication

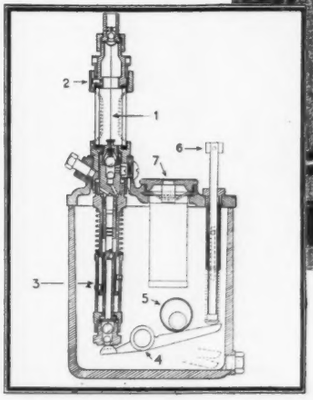
The pump unit is the heart of a McCord "LF" Lubricator. Precision built, it has the positive action of a machine gun, forcing oil in measured quantities to the cylinder wall or points of lubrication.

Positive and quickly made adjustments assure that accurate timing and positive delivery will be maintained.

The McCord "LF" Pump Unit

The pump unit and sight feed are combined in one unit. The sight feed glass for each feed is placed in the discharge line and shows the actual amount of lubricant being forced to each point of lubrication. The "LF" pump construction insures that all of the oil shown in the sight feed glass will reach the point of lubrication.

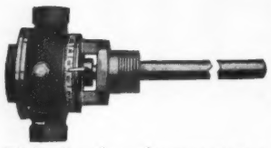
The pump unit is easily removed by loosening a single holding screw.



McCORD

RADIATOR & MFG. CO., DETROIT, MICH.

LUBRICATOR DIVISION



To change temperature, merely move the indicator to the degree of heat desired. Figures indicate degrees. Convenient adjustment on OUTSIDE!

This is the thermostat complete, self-contained, no diaphragm valves necessary.

THERMOSTAT

Will control temperature automatically.

We also carry chemical pumps for oil treating.

In stock at Tulsa.

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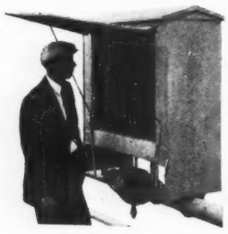

METER HOUSES

We carry stocks of meter houses like one shown above at Tulsa. All meter houses made of copper alloy galvanized sheets.

The patented collapsible meter house as shown at left has been installed by many of the leading natural gasoline and gas companies. This meter house crated and ready for shipment weighs less than 100 pounds. It is portable and easily assembled. It is weatherproof and so designed that meter charts can be changed without danger of charts becoming wet in rainy weather. There are also a number of other advantages that we will be pleased to explain to you.

VENTILATORS

Rotary and stationary ventilators in all sizes. Made of copper alloy galvanized sheets.

We solicit your inquiries.

DEAN & STEPHENS

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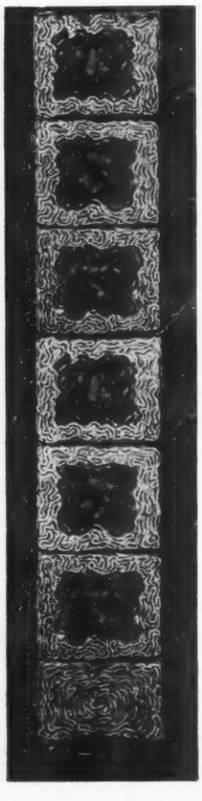

Have you figured the cost of each packing replacement and added to this the heavy bills for redressing rods plus the cost of each shutdown?

Do you want to save a substantial part of this expense?

Let DURAMETALLIC do it.

NEXT TO GOOD SHAFTS DURAMETALLIC PACKINGS ARE MOST IMPORTANT

DURAMETALLIC was devised to last longer. The materials comprising it are scientifically selected to endure great heat and to withstand corrosion. DURAMETALLIC always presents to the rod a lubricated, antifriction metallic face.

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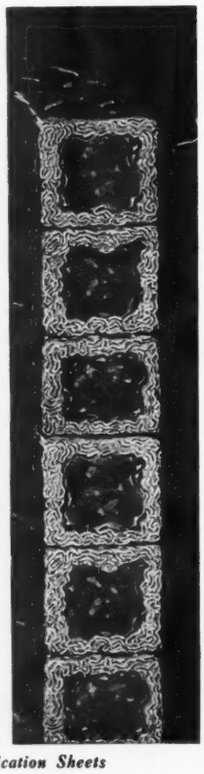

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Durametallic Corp., 1712 Westhimer Dr., Houston, **Texas.**
Durametallic Corp., 511 W. Washington Blvd., **Los Angeles.**
Durametallic Corp., 35 E. Wacker Drive, **Chicago, Ill.**
Durametallic Corp., 707 Guaranty Trust Bldg., **Detroit, Mich.**
Durametallic Packing Co., 405 Equity Bldg., **Okla. City, Okla.**
Universal Packing Corp., 108 Smithfield St., **Pittsburgh, Pa.**
Universal Packing Corp., 452 Lexington Ave., **New York City.**

LA SALLE PARISH—URANIA

Ark. Fuel Oil Co.'s No. 5 Urania, 200 ft. S, 200 ft. E, NW cor. NE SE, Sec. 24-10-1e.....Drlg. hard limy shale 6,171 ft.
Hope Oil Co.'s No. 5 Urania, 660 ft. E, 150 ft. S, NW cor. SW SW, Sec. 19-10-2e.....Derrick.
Kinney, Hardtner & Randall's No. 1 Kinney, SW SW, Sec. 7-10-2e.....S.D. 1,570 ft.

MOREHOUSE PARISH

Bahan & Bahan's No. 4 Feazel, 900 ft. W, 330 ft. S, NE cor., Sec. 2-20-4.....Location.
J. S. Herkness' No. 12 Bowles, 3,392 ft. E, 3,300 ft. S, NW cor., Sec. 18-20-5.....Cmtd. 6-in. 2,615 ft; T.D. 2,737 ft.
Industrial Gas Co.'s No. 1 fee, 1,980 ft. S, 660 ft. W, NE cor., Sec. 3-20-4.....Location.
La. G. & F. Co.'s No. 26 Crossett, 645 ft. E, 574 ft. S, NW cor. Lot 9, Sec. 33-21-5.....Derrick.
La. G. & F. Co.'s No. 27 Crossett, N 67° 30 ft. E 2,079 ft; N 20° 30 ft. W 594 ft, SW cor. Lot 3, Sec. 33, in Sec. 45-21-5.....Cmtd. 6-in. 2,354 ft.

OUACHITA PARISH

Amalgamated Co.'s No. 1-B Kate Cole, 660 ft. N, 660 ft. E, SW cor. NE SW, Sec. 25-20-4.....Rig up.
Ark.-La. P. L. Co.'s No. 4 Rea & Green, 400 ft. N, 3,975 ft. W, SE cor., Sec. 2, in Sec. 82-18-4.....Cmtd. 6⅝-in. 2,159 ft.
Carbon Consolidated, Inc.'s No. 3 Kate Cole, 660 ft. S, 544 ft. E, C, Sec. 26-20-4.....Rig up.
Carbon Consolidated, Inc.'s No. 5 Guthrie (was United Oil & Nat. Gas Co.'s No. 5 Guthrie), 6,634 ft. N, 7,078 ft. W, cor. Secs. 49, 25 and 26, in Sec. 50-20-4..Derrick.
Hope Prod. Co.'s No. 2 Fairbanks, 1,876 ft. E, 623 ft. N, SW cor. SE, Sec. 25-20-4.....Location.
Hope Prod. Co.'s No. 3 Fairbanks, 1,876 ft. E, 628 ft. S, NW cor. NE, Sec. 36-20-4.....Sidetracking drill stem; T.D. 2,302 ft.
Jordan Drlg. Co.'s No. 6 Cole, 1,596 ft. W, 2,388 ft. N, SE cor., Sec. 49, in Sec. 80-18-4.....Cmtd. 8-in. 831 ft.
Jordan Drlg. Co.'s No. 7 Cole, 265 ft. S, 1,459 ft. W, NE cor., Sec. 49, in Sec. 50-18-4.....Location.
Jordan Drlg. Co.'s No. 2 Pereboom, 1,207 ft. W, 264 ft. S, C, Sec. 9-18-4.....Location.
Jordan Drlg. Co.'s No. 1 School, 216 ft. S, 244 ft. W, NE cor. NW, Sec. 16-18-4.....Location.
La. G. & F. Co.'s No. 2 Breard, S 80° 50 ft., W 891 ft., S 31° E 489 ft; NE cor., Sec. 45-18-4.....Cmtd. 6-in. 2,167 ft.
La. G. & F. Co.'s No. 3 Breard, S 9° 734 ft., S 81° E 594 ft., NW cor., Sec. 44-18-4.....Location.
Union Gas Products Co.'s No. 1 Hare, 660 ft. S, 660 ft. W, NE cor. NW, Sec. 22-19-5.....D.S. test 2,565 ft; dry; W.O.
United Carbon Co.'s No. 5 Spade, 842 ft. W, 1,758 ft. S, NE cor., Sec. 34-19-4.....Drlg. 1,900 ft.
United Carbon Co.'s No. 6 Spade, 1,180 ft. S, 140 ft. E, NW cor., Sec. 27-19-4.....Location.
United O. & N. G. Co.'s No. 2 Cole, 660 ft. S, 594 ft. E, C, Sec. 26-20-4.....Derrick.

RICHLAND PARISH

Ark.-La. P. L. Co.'s No. 4-B Sartor, 660 ft. S, 1,320 ft. E, NW cor. SW, Sec. 18-16-6.....Drlg. 1,990 ft.
W. C. Feazel's No. 1 R. B. Simon, 2,406 ft. W, 2,020 ft. S, NE cor., Sec. 11-16-6.....Rig up.
Franklin O. & G. Co.'s No. 1 Thomason, 660 ft. N, 165 ft. W, SE cor. NE, Sec. 14-16-6.....Location.
Industrial Gas Co.'s No. 1 Alexander, 760 ft. E, 27 ft. N, SW cor. SE, Sec. 4-16-6.....Rig up.
International Gas Prod. Co.'s No. 1 Minnie LaGrone, 769 ft. N, 858 ft. E, SW cor., Sec. 7-16-7.....Location.
Northern La. Nat. Gas Co.'s No. 1 Mulhern, 330 ft. S, 660 ft. E, NW cor., Sec. 28-16-6.....Drlg. 1,600 ft.
Palmer Corp.'s No. 1 Louise Rhymes, 1,335 ft. N, 906 ft. E, SW cor., Sec. 32-17-6.....Cmtd. 6-in. 2,300 ft.
Palmer Corp.'s No. 6 Rhymes, 1,290 ft. S, 1,080 ft. E, NW cor., Sec. 3-16-6.....Derrick.
Palmer Corp.'s No. 8 Rhymes, 1,008 ft. E, 635 ft. S, NW cor., Sec. 33-17-6.....Began drlg. Apr. 26; cmtd. 12½-in. 193 ft.
Palmer Corp.'s No. 9 Rhymes, 733 ft. N, 1,278 ft. E, SW cor., Sec. 4-16-6.....Cmtd. 6-in. 2,300 ft.
Palmer Corp.'s No. 1-E D. R. Sartor, 495 ft. S, 660 ft. E, NW cor., Sec. 16-16-6.....Rig up.
Pelican Nat. Gas. Co.'s No. 1 M. Chapman, 660 ft. N, 660 ft. E, SW cor., Sec. 14-16-6.....Location.
Richland Prod. Co.'s No. 1 T. S. McCoy, 1,252 ft. E, 589 ft. N, SW cor., Sec. 3-16-6.....Location.
Richland Prod. Co.'s No. 1 Thomason, 660 ft. E, 1,320 ft. S, NW cor. SW, Sec. 22-16-6.....Drlg. 1,500 ft.
Southern Carbon Co.'s No. 1 McCoy, 1,980 ft. E, 3,300 ft. S, NE cor., Sec. 16-16-6.....S.D; T.D. 2,450 ft.
Southern Carbon Co.'s No. 1 W. E. Landers, 1,980 ft. N, 1,220 ft. E, SW cor., Sec. 10-16-6.....Cmtd. 6-in. 2,280 ft.
Southern Carbon Co.'s No. 1 L. S. Mulhern, 660 ft. S, 560 ft. W, NE cor. NW, Sec. 30-16-6.....Began drlg. Apr. 27; cmtd. 12-in. 185 ft.
Southern Carbon Co.'s No. 4 E. A. and F. B. Sartor, 1,371 ft. E, 4,563 ft. S, NW cor., Sec. 18-16-6.....Derrick.
United Carbon Co.'s No. 1 Duff, 1,320 ft. N, 660 ft. W, SE cor., Sec. 15-16-6.....Derrick.
United Carbon Co.'s No. 1 Landers, 1,320 ft. S, 660 ft. E, NW cor., Sec. 3-15-6.....Derrick.
United Carbon Co.'s No. 1 Cooper, 679 ft. W, 584 ft. N, SE cor., Sec. 24-16-6.....Cmtd. 8-in. 891 ft.
United Carbon Co.'s No. 2 Mulhern, 660 ft. S, 750 ft. E, NW cor. NW, Sec. 30-16-6.....Cmtd. 6-in. 2,280 ft.

SABINE PARISH—PLEASANT HILL

Bridges-Clark Oil Co.'s No. 2 J. W. Guy, 330 ft. S, 330 ft. W, NE cor. SE SE, Sec. 33-10-12.....Drlg. 2,375 ft.
F. A. Bartlett, Jr.'s No. 1 Logan, 200 ft. S, 200 ft. E, NW cor., Sec. 27-10-12.....Rig up.
Standard Oil Co.'s No. 2 Ives, 330 ft. N, 330 ft. E, SW cor. SE SW, Sec. 34-10-12.....Rig up.

SABINE PARISH—ZWOLLE

T. D. Allison's No. 1 Holliday, Sec. 31-8-12, Zwolle Townsite.....Derrick.
Allen & Thompson's No. 1 Wall, Zwolle townsite in Sec. 31-8-12.....Cored chalk 2,222 ft.
Bahan & Ryan's No. 1 Mischel, 1,215 ft. N, 1,169 ft. W, SE cor. SW, Sec. 32-8-12.....Bailed dry; W.O. 2,570 ft.
Loring Oil Co.'s No. 2 Bowman-Hicks, 200 ft. S, 200 ft. W, NE cor. NE NW, Sec. 3-7-12.....W.O.S.R; 2,725 ft.
Loring Oil Co.'s (formerly Benedum & Trees Oil Co.'s) No. 4 Bowman-Hicks, 330 ft. N, 330 ft. W, C, Sec. 34-8-12.....Began drlg. Apr. 27; cmtd. 16-in. 100 ft.
Loring Oil Co.'s (formerly Benedum & Trees Oil Co.'s) No. 5 Bowman-Hicks, 900 ft. S, 1,400 ft. W, C, Sec. 34-8-12.....Drlg. 2,917 ft.
Loring Oil Co.'s (formerly Benedum & Trees') No. 7 Bowman-Hicks, 330 ft. S and W, NE cor. NW, Sec. 34-7-12.....Setting 3-in. tubing 2,700 ft.
Loring Oil Co.'s No. 8 Bowman-Hicks, 330 ft. S, 330 ft. E, NW cor. SW SE, Sec. 33-8-12.....Derrick.
Loring Oil Co.'s No. 9 Bowman-Hicks, 330 ft. N, 330 ft. W, SE cor. NE SE, Sec. 34-8-12.....Rig up.
McFarren & Pace's No. 1 Reeves, 581 ft. E, 588 ft. N, SW cor. NW, Sec. 21-8-12.....Derrick.
L. Nagle's No. 1 Corley, Sec. 31-8-12.....Rig up.
R. L. Burch's No. 1 Sabine Lbr. Co., Sec. 31-8-12.....W.O.S.R; 1,200 ft. oil 2,458 ft.
Joe Burnham's No. 2 Bolin, 442 ft. E, 275 ft. N, SW cor. NE, Sec. 31-8-12.....Location.

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ONE YEAR ago there was announced a new Orifice Meter embodying many fundamental improvements:

Permanent accuracy through entire differential range.

Extreme delicacy of responsiveness . . . inherently impossible to build up false differential under conditions of pulsation.

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Positive protection against overpressure.

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Gravity controlled pressure on pens.

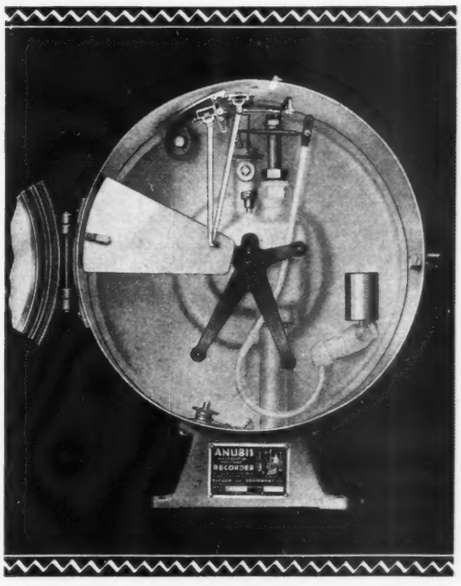
Close levelling unnecessary.

Simplicity, compactness, and strength of construction.

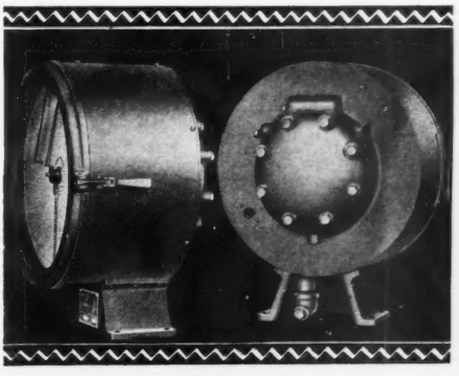
The response to these revolutionary advantages was immediate...from major companies in the United States and in India, Roumania, Venezuela, and elsewhere...with the result that demand has continuously been in advance of production . . . .

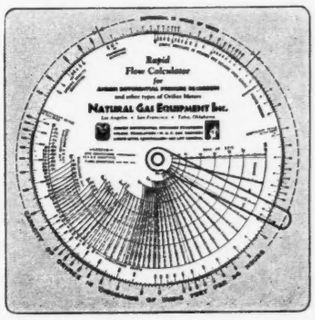
Now... the Rapid Flow Calculator

is presented to the industry, providing with the superior performance of ANUBIS Recorders a time and labor saving method of finding coefficient and volume, correct orifice size, and differential pressure.



ANUBIS Differential Pressure Recorder with clock and chart removed to show simple, compact, easily accessible and durable construction.





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J. R. Crawford's No. 1 Pearce, 408 feet S, 200 ft. E, NW cor. SW SE, Sec. 32-8-12.....S.D. 1,950 ft.
Dooley & Howard's No. 1 Williams, Sec. 31-8-12.....Rig up.
R. T. Dudney et al's No. 1 Pearson, SE cor. Lot 3, Blk. 3, SW NW, Sec. 31-8-12, Zwolle townsite.....Cmtd. 6⅝-in. 2,194 ft.
Dixie Oil Co.'s No. 1 Nunn, 330 ft. N, 85 ft. W, C, Sec. 32-8-12.....Dry 2,497 ft; W.O.S.R. 2,514 ft; 1,600 ft. oil.
Gerke et al's No. 1 Okerson, Zwolle townsite, Sec. 31-8-12.....Derrick.
Glassell & Merren's No. 1 Thomas, Lot 13, Blk. 3, (Zwolle townsite), Sec. 31-8-12.....Oil show; S.D.; W.O. 2,600 ft.
W. G. Gray, trustee's No. 1 Knowlton, 200 ft. S, 330 ft. W, NE cor. NW NE, Sec. 6-7-12.....Drlg. 3,700 ft.
G. A. Henshaw et al's No. 1-A Sabine Lbr. Co., 200 ft. N, 760 ft. E, SW cor. SE NE, Sec. 31-8-12.....S.D. 2,525 ft.
G. A. Henshaw et al's No. 3-A Sabine Lbr. Co., 766 ft. N, 200 ft. E, SW cor. SE NE, Sec. 31-8-12.....Location.
G. A. Henshaw et al's No. 1-B Sabine Lbr. Co., 150 ft. S and E, C, Sec. 31-8-12.....T.A. 2,640 ft.
C. L. Jett, trustee's No. 1 Jones, 150 ft. C, Sec. 31-8-12.....Cmtd. 6-in. 2,164 ft; T.D. 2,170 ft.
F. M. Hood's No. 1 Winston, 460 ft. S, 290 ft. E, NW cor., Sec. 31-8-12.....1,400 ft. oil; arranging to swab; T.D. 2,515 ft.
Jones & Johnson's No. 1 Pearson, Sec. 31-8-12.....W.O.S.R; 700 ft. oil; T.D. 2,318 ft.
O'Brien Bros.' No. 1 Colquitt, 330 ft. S and E, NW cor. SW, Sec. 32-8-12.....Drlg. 2,535 ft; T.A. 2,575 ft.
Ohio Oil Co.'s No. 3 Bowman-Hicks, 330 ft. S and W, NE cor. SE SW, Sec. 33-8-12.....S.D. 2,680 ft.
Olsen Bros.' No. 1 Ferguson, 330 ft. N, 330 ft. E, SW cor. NW SE, Sec. 33-8-12.....Derrick.
Olsen Bros.' No. 1 Keeler, SW cor. SW SE, Sec. 27-8-12.....T.A. 2,625 ft.
W. D. Perritt's No. 1 Crow, 150 ft. N, 150 ft. E, SW cor. SE SW SW, Sec. 30-8-12.....Began drlg. Apr. 25; cmtd. 10-in. 74 ft.
Philp Bros.' No. 1 Dow, Lot 1, Blk. 18, Zwolle townsite, Sec. 31-8-12.....Drlg. 980 ft.
Ray-Dawes Drlg. Co.'s No. 1 Mansfield Hwd. Lbr. Co., Sec. 36-8-13.....T.A. 2,550 ft.
Ruston Drlg. Co.'s No. 1 Bowman-Hicks, 330 ft. S, 330 ft. W, NE cor., Sec. 4-7-12.....T.A. 2,640 ft.
Ruston Drlg. Co.'s No. 1-A Bowman-Hicks, 330 ft. S, 330 ft. E, NW cor. SW SW, Sec. 35-8-12.....T.A. 2,690 ft.
Sabine Lbr. Co.'s No. 1 fee, 150 ft. N, 150 ft. W, C, Sec. 31-8-12.....Drlg. 2,310 ft.
C. E. Simmons' No. 1 Anderson, Sec. 31-8-12 (Zwolle townsite).....Rig up.
C. E. Simmons' No. 1 Leach, 435 ft. W, 113 ft. N, SE cor. SW NW.....Location.
W. S. Smith et al's No. 1 Colquitt (Zwolle townsite), 500 ft. S, 480 ft. E, NW cor. SW NE, Sec. 31-8-12.....Derrick.
W. S. Smith et al's No. 1 Henderson, 200 ft. S, 300 ft. E, NW cor. SE SE, Sec. 31-8-12.....Derrick.
W. S. Smith et al's No. 1 Williams (Zwolle townsite), 804 ft. N, 40 ft. W, SE cor. SW NE, Sec. 31-8-12.....Rig up.
Stovall Drlg. Co.'s No. 1 Lefkovitz, 247 ft. N, 250 ft. W, SE cor. N¾ SE NW, Sec. 33-8-12.....Bailed dry 2,694 ft. and 2,699 ft; W.O.

A. H. Tarver et al's No. 2 Sabine State Bank, 300 ft. N, 300 ft. E, SW cor. NW, Sec. 26-8-12.....Derrick.

SABINE PARISH—BLUE LAKE

H. S. Autrey's No. 1 Long-Bell, 1,120 ft. S, 1,120 ft. W, NE cor., Sec. 35-8-14.....Arranging test 1,970 ft.
R. L. Gay's No. 7 Bowman-Hicks, Sec. 14-7-14.....Hole full oil; W.O.S.R.; T.D. 2,575 ft.
R. L. Gay's No. 8 Bowman-Hicks, Sec. 18-7-13.....Rig up.
R. L. Gay's No. 4 Sabine Lbr. Co., Sec. 13-7-14.....Fishing D.S; T.D. 2,459 ft.
Ruston Drlg. Co.'s No. 1-B Bowman-Hicks, 330 ft. S, 330 ft. E. NW cor., Sec. 24-7-14.....Cmtd. 6⅝-in. 2,073 ft.

UNION PARISH

Greenwood Prod. Co.'s No. 1-B Guinn, 1,980 ft. N, 1,980 ft. W, SE cor. NE, Sec. 32-21-3.....Began drlg. Apr. 27; cmtd. 12-in. 173 ft.
Greenwood Prod. Co.'s No. 1-C Guinn, 1,320 ft. N, 3,-300 ft. W, SE cor. NE, Sec. 32-21-3.....Location.
Industrial Gas Co.'s No. 1-B Jenny, 660 ft. N, 660 ft. E, SW cor., Sec. 33-21-4.....Cmtd. 9-in. 876 ft; drlg. 1,100 ft.
Sabine Prod. Co.'s No. 1 Morgan, 834 ft. W, 88 ft. S, NE cor. NW, Sec. 11-20-3.....Drlg. 6-in. plug; T.D. 2,070 ft.

WEBSTER PARISH—SAREPTA AND SHONGALOO

S. H. Riggs' (was Liggett et al's) No. 1 Slack, 150 ft. N, 366 ft. W, SE cor. SW SE, Sec. 36-23-11.....Flowing estimated 800 bbls. fluid, 80% S.W; 2-ft. sand 2,742 ft.
Magnolia Pet. Co.'s No. 3 Scoggins, 165 ft. N, 230 ft. W, SE cor. SW NW, Sec. 1-22-11.....W.O.S.R; T.D. 2,709 ft.
Merrick Oil Corp.'s No. 2 Slack, SE cor. NW, Sec. 36-23-11.....Derrick; No. 1 drilled by S. H. Riggs, was formerly Liggett et al's.
Mt. Vernon Oil Co.'s No. 3 Pardee, 200 ft. S, 1,500 ft. E, NW cor. NE SW, Sec. 3-22-11.....1,400 ft. fluid; 6 ft. sand; W.O.S.R.; T.D. 2,653 ft.
Sarepta Oil Co.'s No. 1 Slack, SW cor. NW NE, Sec. 36-23-11.....Derrick.
Sarepta Oil Co.'s No. 2 Gardner, NE SW, Sec. 1-22-11.....Rig up.

ARKANSAS
JOHNSON COUNTY

Ark.-La. Pipe Line Co.'s No. 1 Cline, 660 ft. S, 660 ft. W, NE cor. NE SE, Sec. 16-10-24.....Began drlg. Apr. 22; drlg.
Blackwell O. & G. Co.'s No. 1 Western Coal & Mining Co., C NE SE, Sec. 20-9-25.....Rig up.

NEVADA COUNTY

Roy Davis et al's No. 1 Chas. Henry, 1,120 ft. N, 1,-120 ft. W, SE cor., Sec. 10-12-20.....Rig up.
C. F. Steele's No. 1 E. W. Groves, Sec. 21-14-20.....S.D. 2,810 ft.

OUACHITA COUNTY—SMACKOVER

L. K. Hamilton's No. 2 Arnold & Doyle, 460 ft. E, NW cor. SE SE, Sec. 23-15-16.....Began drlg. Apr. 26; cmtd. 10-in. 42 ft.
J. D. Reynolds' No. 3 Berg, NE cor. SE SW, Sec. 27-15-15.....W.O.S.R; 200 ft. fluid 2,080 ft.
J. D. Reynolds' No. 4 Berg, 300 ft. S, 180 ft. W, NE cor. SE SW, Sec. 27-15-15.....Derrick.

OUACHITA COUNTY—STEPHENS

Magnolia Pet. Co.'s No. 2 Grayson, 150 ft. N, 200 ft. W, SE cor. NE, Sec. 21-15-19.....100 ft. oil 2,134 ft; arranging to deepen.

UNION COUNTY—CHAMPAGNOLLE

Magnolia Pet. Co.'s No. 1 Gregory, Sec. 15-17-14.....Cored sandy shale 3,587 ft.
Sundby et al's No. 2 Perdue, 75 ft. S, 150 ft. E, NW cor., Sec. 33-16-14.....Rig up.
Root Refineries, Inc.'s No. 2 Jerry, Sec. 21-17-14.....Derrick.

UNION COUNTY—EL DORADO

H. L. Hunt's No. 6 Pratt, 150 ft. N, 330 ft. E, SW cor. NE NE, Sec. 7-18-15.....Fishing for liner 2,214 ft.
Malloy & Co.'s No. 4 Goodwin, 300 ft. N, 300 ft. E, SW cor. NE NE, Sec. 36-17-16.....Running sand pump; 22 ft. hard sand; T.D. 2,222 ft.
Malloy & Co.'s No. 1 Murphy, Sec. 1-18-16.....Rig up; W.O.
Malloy & Co.'s No. 3 Robertson, NE cor. S½ SW NE, Sec. 6-18-15.....Location.
Wesinger & Ball's No. 1 Rogers, 1,014 ft. N, 150 ft. E, SW cor. E½ SW SE, Sec. 31-17-15.....40 ft. fluid; bailing 2,221 ft.

EAST TEXAS
HARRISON COUNTY

Ark.-La. Pipe Line Co.'s No. 2 Gibson, 330 ft. N, 330 ft. W, SE cor. Gibson tract, J. Womack Sur.....Rig up.
Shell Rock Pet. Co.'s No. 1 Oliver Dougherty, W. D. Burris Sur.....Drlg. 2,710 ft.

PANOLA COUNTY

Ark.-La. P. L. Co.'s No. 12 Werner, 1,102 ft. N, 132 ft. E, SW cor. 15-ac. tract in E. F. Mitcheson Sur.....Estimated 5,000,000 ft. gas; D.S. test 3,125-74 ft; cmtd. 7-in. 3,-125 ft; T.D. 3,774 ft.
Calatex O. & G. Co.'s No. 3 Caldwell, 243 ft. S, 1,034 ft. W, SE cor. Jno. Womack Sur. in Jas. Shadoin Sur...S.D. 1,400 ft.
Nat. Gas Prod. Co.'s No. 3 Roquemore, B. C. Jordan Sur..Tested dry 4,375 ft.
Doris Thomason's No. 10 Crenshaw, 1,730 ft. S, 2,594 ft. W, SE cor. Jno. Womack Sur. in B. C. Jordan Sur...Location.

WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

(Continued from Page 73)

CLAIBORNE PARISH

El Dorado Chief Oil Co.'s No. 1 Dance, C SW NE, Sec. 27-20-7.....S.D. 2,240 ft.
Leue Oil Co.'s No. 1 Taylor, 1,153 ft. S, 360 ft. W, C, Sec. 16-22-6.....S.D. 2,864 ft.
Triangle Drlg. Co.'s No. 1 Caskey, 660 ft. N, 660 ft. W, SE cor., Sec. 6-19-5.....Rig up.

CONCORDIA PARISH

A. C. Glassell's No. 1 Pittsfield Plantation, N 9°, E 1,320 ft., SW cor., Sec. 41-8-10.....Rig up.
Joe Man et al's No. 1 Maxwell, C, Sec. 35-3n-8e.....D.S. test 2,040 ft., dry; drlg. 2,-072 ft.

DE SOTO PARISH

Benson Oil Co.'s No. 1 Harris, Sec. 6-10-13.....Tested dry; show gas; W.O. 3,650 ft.
Odell & Lawton's (was L. A. Crump's) No. 1 Harris, 300 ft. N, 300 ft. E, SW cor. NW SE, Sec. 11-13-14..O.W.D.D; derrick; T.D. 3,140 ft.
Bud Harrell's No. 1 Horton, 450 ft. E, 150 ft. N, SW cor., Sec. 4-11-11.....Rig up.
H. L. Hunt's No. 1 Furman, Sec. 5-14-13.....Rig up.
R. O. Roy's No. 1 Nelson, 660 ft. S, 660 ft. E, NW cor., Sec. 36-15-13.....Rig up.

FRANKLIN PARISH

Davis et al's No. 1 Moore, 600 ft. W, 200 ft. S, NE cor., Sec. 12-11-6.....S.D. 1,430 ft.
Evansville Inv. Co.'s No. 1 W. B. Welch, 945 ft. E, 511 ft. N, SW cor., Sec. 2-14-8.....S.D. 4,200 ft.

JACKSON PARISH

El Dorado Chief O. & G. Co.'s No. 1 Sou. Advance Paper Bag Co., 225 ft. N, 275 ft. E, SW cor. SW NE, Sec. 35-15-4.....Derrick.

NATCHITOCHES PARISH

W. M. Coats' No. 1 Collins, 730 ft. N, 50 ft. E, C, Sec. 28-9-10.....Rig up.
S. D. McDaniel's No. 2 Clark & Morse, 800 ft. E, 350 ft. N, C, Sec. 23-5-6.....Tested 1,000,000 ft. gas and S.W. 3 ft; S.D. for orders; T.D. 2,-526 ft.
Robeline O. & G. Co.'s No. 1 Winn, 558 ft. N, 348 ft. E, SW cor. SE, Sec. 7-8-9.....S.D. 1,600 ft.

RAPIDES PARISH

Ayers Bros.' No. 1 Wickliff, 2,790 ft. N, 150 ft. E, SW cor., Sec. 9-5n-2e.....S.D. for fuel 2,650 ft.

RED RIVER PARISH

W. D. Ball's No. 1 Krumholtz, 660 ft. S, 660 ft. E, NW cor., Sec. 32-14-10.....Bailing to test 1,700 ft.
E. C. Lucas' No. 1 La. Pecan Co., Sec. 26-13-11.....Derrick.

RICHLAND PARISH

Austin & McDonald's No. 1 Hunt, 594 ft. N, 660 ft. E, SW cor., Sec. 13-17-5.....Derrick.
Austin & McDonald's No. 2 Millsaps, SW cor., Sec. 17-17-6.....Waiting orders; T.D. 2,657 ft.
Austin & McDonald's No. 3 Millsaps, 1,980 ft. S, 660 ft. E, NW cor., Sec. 16-17-6.....Tested S.W; W.O. 2,477 ft.
Austin & McDonald's No. 4 Millsaps, NW cor., Sec. 16-17-6.....Location.
Austin & McDonald's No. 5 Millsaps, 2,640 ft. N, 1,320 ft. W, SE cor., Sec. 8-17-6.....Derrick.
W. C. Feazel's No. 1 Landrum, 620 ft. N, 4,573 ft. E, SW cor., Sec. 6-16-7.....Derrick.

SABINE PARISH

Longoria et al's No. 1 Belton, 330 ft. S, 330 ft. E, C, NE, Sec. 31-9-13.....Rig up.
Loring Oil Co.'s No. 1 Peavy-Wilson Lbr. Co., 200 ft. S, 330 ft. W, NE cor. SW NE, Sec. 21-6-13.....Began drlg. Apr. 26; cmtd. 15½-in. 150 ft.
Lohman et al's No. 1 Wyatt Lbr. Co., 150 ft. S, 330 ft. E, NW cor. NE SW, Sec. 18-4-11.....Derrick.
J. C. McDaniel & Lieber's No. 1 Batson, 675 ft. N, 318 ft. E, SW cor. SE, Sec. 16-18-12.....Drlg. 1,285 ft.
Ohio Oil Co.'s No. 1 Acct. 2, Bowman-Hicks, 275 ft. N, 330 ft. W, SE cor. NE SE, Sec. 6-7-13.....Cmtd. 6⅝-in. 2,070 ft; drlg. 2,-260 ft.
Paramount O. & G. Co.'s No. 1 Woolems, 330 ft. N, 330 ft. W, SE cor. NE NW, Sec. 11-6-12.....S.D. 1,656 ft.
Pelican O. & G. Co.'s No. 1 La. Long Leaf Lbr. Co., 215 ft. N, 30 ft. E, SW cor. NW SE, Sec. 4-7-11.....150 ft. oil in hole; T.D. 2,425 ft; W.O.S.R.
Pelican O. & G. Co.'s No. 2 La. Long Leaf Lbr. Co., C NE, Sec. 20-7-12.....Rig up.
Pelican O. & G. Co.'s No. 1 Sabine Lbr. Co., 330 ft. S, 330 ft. E, NW cor. NE SW, Sec. 1-7-12.....Show oil; W.O. 2,580 ft.
D. H. Riddick's No. 1 Scretchfield, 400 ft. E, 400 ft. N, SW cor. NW SE, Sec. 18-9-12.....S.D. 2,590 ft.
Teteco Oil Corp.'s No. 1 La. Long Leaf Lbr. Co., 325 ft. S, 100 ft. W, NE cor. NW, Sec. 18-6-12.....Rig up.

TENSAS PARISH

A. R. Willis et al's No. 1 Currey, 1,320 ft. S, 1,320 ft. E, NW cor., Sec. 39-11-12.....Drlg. 1,760 ft.

UNION PARISH

Bahan & Bahan's No. 1 J. West, 660 ft. N, 660 ft. E, SW cor. SE, Sec. 33-23-3.....Drlg. 2,430 ft.
Fred Stovall's No. 1 Stovall, 1,320 ft. E, 350 ft. N, SW cor., Sec. 32-23-4.....Rig up.

WEBSTER PARISH

J. J. Kean's No. 1 Monzingo (was F. M. Fuller's), 200 ft. N, 200 ft. W, SE cor., Sec. 17-18-8.....Arranging to set 8-in; T.D. 1,-680 ft.

WEST CARROLL PARISH

Falmer Corp.'s No. 1-A Marston, 1,320 ft. S, 89° 35' W, 1,320 ft. of SE cor., Sec. 11-19-10.....Drlg. sand rock 2,794 ft.

ARKANSAS
ASHLEY COUNTY

J. D. Marcum Co.'s No. 1 McGarry, 300 ft. W, 100 ft. S, C, Sec. 10-19-4.....O.W.D.D; arranging to deepen; T.D. 3,300 ft.

CALHOUN COUNTY

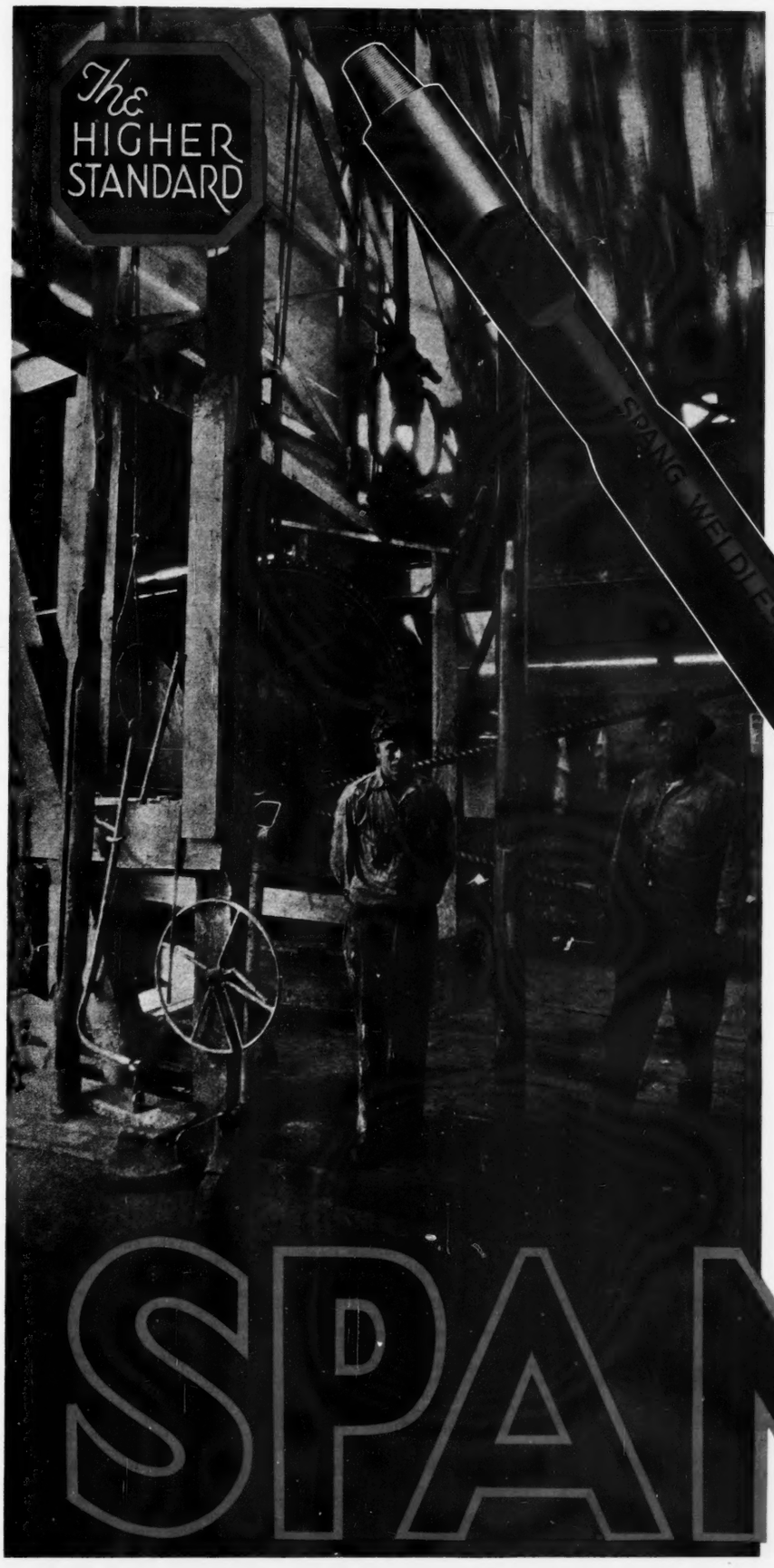
Tidal Oil Co.'s No. 1 Freeman-Smith Lbr. Co., 150 ft. C, S line, NE NW, Sec. 3-16-14.....Location.

CLEBURNE COUNTY

Cosden Oil Co. of Ark.'s No. 1 Donophan, 100 ft. S, 660 ft. E, NW cor. SW SE, Sec. 19-9-10.....Drlg. 2,920 ft.
Donnelly-Craver et al's No. 1 Doniphan Lbr. Co., SE cor. NW, Sec. 33-11-9.....Drlg. 700 ft.

COLUMBIA COUNTY

Parker et al's No. 1 Franks, 330 ft. S, 330 ft. W, C, Sec. 25-19-22.....S.D. 2,835 ft.



STRONGER! SAFER! SOUNDER!

Place: Carter Oil Company's Durant No. 10, Bristow, Oklahoma. *Left:* Frank Shyrock, tool dresser. *Right:* Tom O'Neil. driller. *Jars:* 8-inch stroke Spang Weldless — used for same reason that they're used on all tools in all fields: *stronger, safer, sounder!* Over 300 leading supply stores carry them in stock.

SPANG & COMPANY
Butler, Pa.

SPANG

WELDLESS JARS

DREW COUNTY

McClintock & Goodka's No. 1 Ogles, 920 ft. W, 400 ft. S, NE cor., Sec. 35-13-5.....Fishing D.S; T.D. 2,619 ft.

FAULKNER COUNTY

Gold Creek O. & G. Co.'s No. 2 Stermer, SE cor. NW SE, Sec. 17-4-13.....Began drlg. Dec. 12.

FRANKLIN COUNTY

Red Bank Oil Co.'s No. 1 Edtin, SW cor., Sec. 33-10-26..Began drlg. Apr. 17; cmtd. 15½-in. 59 ft; drlg. 300 ft.

GARLAND COUNTY

Givens et al's No. 1 Garrett, 660 ft. S, 660 ft. W, C, Sec. 1-3-19.....S.D; W.O. 3,604 ft.

LITTLE RIVER COUNTY

A. L. Buck's No. 1 Greason, NW NW, Sec. 25-12-32.....Coring 2,335 ft.
McDonald & Shaw's No. 1 W. E. Black, 240 ft. N, 450 ft. W, SE cor. SE NE, Sec. 12-13-28.....Arranging to set 6⅝-in; T.D. 2,180 ft.

LOGAN COUNTY

J. H. Flowers' No. 1 J. H. White, Sec. 13-6-26.....O.W.D.D; comp. 3,610 ft; U.R. 3,610 ft.
M. W. Greeson's No. 1 C. S. Parke, 330 ft. N, 330 ft. W, SE cor., Sec. 21-8-24.....Cmtd. 6-in. 950 ft; drlg. broken shale 1,825 ft.

OUACHITA COUNTY

Anderson & Wimmer's No. 1 Buck, Sec. 7-15-17.....Reported junked and abd; C.O; T.D. 2,727 ft.

PIKE COUNTY

Theo. Davis, trustee's No. 1 Ruth Wilson, 200 ft. S, 200 ft. W, NE cor., Sec. 25-5-26.....Fishing 700 ft; S.O.

POPE COUNTY

Ark.-La. P. L. Co.'s No. 1 Crotts, 660 ft. S, 660 ft. W, NE cor. SW NE, Sec. 16-9-21.....Cmtd. 8¼-in. 395 ft; drlg. 1,235 ft.
Cosden Oil Co.'s No. 1 Mo. Pac. R.R., 660 ft. N, 660 ft. E, SW cor. NW SE, Sec. 13-9-19.....Cmtd. 8¼-in. 3,812 ft.

ST FRANCIS COUNTY

Brownlee Drlg. Co.'s No. 1 Whitted, 110 ft. N, 110 ft. E. SW cor. SE NW, Sec. 28-4-1.....Coring 2,263 ft; corrected depth.

UNION COUNTY

Federal Pet. Co. and Union Sawmill Co.'s No. 1 fee, 330 ft. N, 330 ft. W, SE cor. NW NE, Sec. 9-18-13...Derrick.
S. B. Hickman's No. 1 Hogg, 330 ft. S, 150 ft. E, NW cor. SE SE, Sec. 35-16-17.....Began drlg. Apr. 25; cmtd. 10-in. 100 ft.
H. L. Hunt's No. 1 Trummell, 240 ft. S, 330 ft. E, NW cor. SW NW, Sec. 28-18-12.....Rig up.
Lion Oil Ref. Co.'s No. 1 Ballard, 330 ft. N, 330 ft. W, SE cor. SW NW, Sec. 10-18-13.....Cored red beds 4,165 ft.
Marine Oil Co.'s No. 2 Simmons, 300 ft. N, 300 ft. E. SW cor. SE NW, Sec. 10-18-13.....Rig up.
Marine Oil Co.'s No. 3-B Winn, 330 ft. S, 330 ft. W, NE cor., Sec. 10-18-13.....Location.
Modisette Drlg. Co.'s No. 4 Union Sawmill, 300 ft. W, 800 ft. N, SE cor., Sec. 14-18-14.....Location.
J. W. Olvey's No. 1 G. G. Simmons, 288 ft. S, 288 ft. W, NE cor. NE NW, Sec. 15-18-13.....Tested 5 joints mud and oil 2,228-80 ft; S.W. 2,483-2,515 ft; T.D. 2,724 ft.
Simms Oil Co.'s No. 1 G. G. Simmons, 200 ft. S, 200 ft. W, NE cor. SW, Sec. 10-18-13.....Drlg hard lime 3,441 ft.
Southern Crude O. P. Co.'s No. 1 Oliver, 330 ft. N, 330 ft. W, SE cor. NW NE, Sec. 11-18-13.....Began drlg. Apr. 25; cmtd. 12½-in. 296 ft.
South El Dorado Oil Co.'s No. 1 Traylor, 330 ft. N, 138 ft. W, SE cor. NW NE, Sec. 9-19-15.....Rig up.

VAN BUREN COUNTY

Glenn Cole et al, trustee's No. 1 Scanlan, 200 ft. S, 200 ft. W, NE cor. SE NW, Sec. 5-19-13.....S.D. 50 ft.

WASHINGTON COUNTY

Delbert & Graves' No. 1 Cunningham, Sec. 14-15-32.....S.D; W.O. 602 ft.
C. H. Willoughby's No. 1 Jones, Sec. 34-16-30.....Trying to kill wtr. flow 2,150 ft; hard sand showing oil 1,637-40 ft.
Lincoln Leaseholding Synd.'s No. 1 Lincoln, Sec. 30-15-32.....U.R. 8-in. to T.D. 1,500 ft.

WHITE COUNTY

Letona Synd.'s No. 1 Letona, SE cor. NW SW, Sec. 35-9-8.....Pulled 5 3/16-in; S.D; W.O; T.D. 3,650 ft.

YELL COUNTY

Tegmeir & Luckett's No. 1 Falcon, Sec. 36-1-21.....Cmtd. 6⅝-in. 3,637 ft; 5 3/16-in. 3,710 ft.

EAST TEXAS

CAMP COUNTY

Rogers et al's No. 1 Enfelt, R. M. Montgomery Sur. ....Tested dry 1,870 ft; S.D. 1,920 ft.

MARION COUNTY

H. L. Hunt's (was R. E. Davidson's) No. 1 Susie Chapman, Jackson-Grayson Sur. .....Coring 2,930 ft.
P. E. Hussey's No. 1 A. A. Trammell, Chas. Lockhart Sur. .....Derrick pattern.

RED RIVER COUNTY

D. M. Buffington's No. 1 Hossler, E. Hughhart Sur. ....S.D. 2,365 ft.
Shad Harper's No. 1 W. R. Garland, J. Wagley Sur. ....S.D. 1,862 ft.
Johnson Pet. Co.'s No. 2 Randolph, Edw. Dean Sur. ....S.D. 2,182 ft.

SHELBY COUNTY

Loring Oil Co.'s (formerly Benedum & Trees Oil Co.'s) No. 1 McCann, D. G. Green Sur. .....Drlg. anhydrite 3,975 ft.
Chapperall Oil Co.'s No. 2 Holt, Matthew Moore Sur. ..D.S. test 10-ft. sand 2,736-46 ft; dry; D.S. test 3,004 ft; dry.

MISSISSIPPI

ALCORN COUNTY

Alcorn Pet. Co.'s No. 1 Matthews, SE cor., Sec. 14-2s-7e..Fishing 6-in. and tools 2,393 ft; T.D. 2,735 ft.

CHICKASAW COUNTY

Hightower & Golson's No. 1 Flemming, NE cor., Sec. 20-13-3 .....Driving 8¼-in. 1,400 ft.

HINDS COUNTY

Oscar Brown's No. 1 Riverside (formerly Hennessee et al's), SE cor. SE SW, Sec. 23-16-5 .....Set 12½-in. 30 ft; S.D. 1,050 ft.
Cane River Oil Co.'s No. 1 Lufkin, Sec. 15-5-1e.....Derrick.
Dome Oil Co.'s No. 1 Elton, Sec. 5-4-1e.....Claim oil sand 818-24 ft; arranging to cmt. 9-in. 818 ft.
Jackson Oil Co.'s No. 1 Central Cotton Oil Co., Sec. 3-5-1e .....Derrick.
Jackson O. & G. Co.'s No. 1 Taylor, C, Sec. 35-6-1e.....D.S. stuck; T.D. 2,900 ft.
La. G. & F. Co.'s No. 1 Harris, Sec. 35-6-1e.....Cmtd. 8¼-in. 2,506 ft; cored chalk 2,521-31 ft; bailing to test.
Love O. & G. Co.'s No. 1 Bridges-Hilzim, 870 ft. N, 920 ft. W, SE cor., Sec. 35-6-1e.....Began drlg. Apr. 28; W.O.
Love O. & G. Co.'s No. 1 Mendoza, Sec. 11-5-1e.....Tested 7,000,000 ft. gas 2,446 ft; W.O.
Magnolia State Oil Co.'s No. 1 Brown, Sec. 19-6-1e.....Derrick.
Progressive Oil Co.'s No. 1 Mayes, Sec. 2-5-1e.....Derrick.
Mrs. Reeder et al's No. 1 State, SE cor. NW NW, Sec. 25-6-1e .....W.O; T.D. 2,905 ft.
Tri-State O. & G. Co.'s No. 1 Wilson, Sec. 23-6-1e.....Derrick.
J. A. Weir et al's No. 1 Holliday & Ross, NW SE, Sec. 8-6-2e .....Derrick.

HUMPHREYS COUNTY

E. S. Steele et al's No. 1 C. B. Box, SE cor. SE NE, Sec. 25-14-4w .....Set 12½-in. 60 ft; S.D.

LAUDERDALE COUNTY

Lauderdale O. & G. Co.'s No. 1 Lackey, 990 ft. S and E, NW cor. NE, Sec. 2-7-16.....Cored hard sand 3,084-87 ft.
Meridian O. & G. Co.'s No. 1 Hauser, Sec. 33-8-18.....S.D; W.O; sandy shale 2,826 ft.
J. R. Smith Oil Co.'s No. 1 C. F. Craig, Sec. 2-16-14.....Derrick.

LAFAYETTE COUNTY

Banks-Goode et al's No. 1 May, 113½ rds. S, 26 rds. E, NW cor. SW, Sec. 22-10-1w.....Derrick.

LINCOLN COUNTY

Lincoln O. & G. Co.'s No. 1 Pat Case, NE NE, Sec. 21-8-6 .....S.D; W.O. 2,221 ft.

MONROE COUNTY

Amory Dev. Co.'s No. 1 Bourland, Sec. 2-13-19.....S.D. 2,912 ft; bailer lost in hole.
Amory Pet. Co.'s No. 1 Hall, Sec. 8-13-19.....Shot 2,402-18 ft; small show oil; arranging to shoot 2,387-95 ft.
Park Bowser et al's No. 1 Cowart, second hole, Sec. 2-12-19 .....S.D. 30 ft.

RANKIN COUNTY

Gulf Ref. Co.'s No. 1 Rainey, NW NW, Sec. 13-5-1e.....D.S. test 2,510-15 ft; oil and S. W; reaming; to set 9-in. 2,500 ft.
R. A. More et al's No. 1 Interior Lbr. Co., Sec. 28-6-1e..Drlg. 900 ft.

WARREN COUNTY

El Dorado Oil Co.'s No. 1 Dornbush, Sec. 8-18-15.....S.D. 2,475 ft; 2,350 ft. D.S. in hole; W.O.

YALOBUSHA COUNTY

Carter Oil Co. and J. D. Collett's No. 1 Blackmur, 330 ft. S, 990 ft. W, Sec. 14-11-4 .....Cored hard sandy shale 2,434 ft; claim small show gas.

YAZOO COUNTY

Amerada Pet. Corp.'s No. 1 Doherty, SW SW, Sec. 24-12-2 .....Drlg. sandy lime 5,183 ft.

ALABAMA

LAMAR COUNTY

Briggs & Knapp's No. 1 Wefel, Sec. 25-12-14.....T.A. 1,740 ft.

LAUDERDALE COUNTY

A. D. Morton et al's No. 10 O'Neal est., Sec. 8-2s-13w..Cmtd. 12½-in. 125 ft; drlg. hard lime 905 ft.

MARION COUNTY

Hobson et al's No. 1 John Clark, SE, Sec. 29-11-14.....Derrick pattern.

WASHINGTON COUNTY

S. A. Hobson's No. 1 Hobson Bros., Sec. 9-8-2.....S.D; S.W. flow at 1,450 ft.
S.A. Hobson's No. 1 Wilson, Sec. 27-7-1.....Fishing bailer; T.D. 881 ft.
Oscar Brown's No. 2 Land & Cotton Co., Sec. 25-3-2w...Drlg. 700 ft.

Mosquito Pest From Marshes Salted By Arkansas Oil Wells

SHREVEPORT, La., May 7. — Although the El Dorado South Field in Union County long since passed its stage of active development, farmers, land and royalty owners, producers and the local and state health authorities are up against a problem that never faced them before in the nine years of the pool's history. Mosquitoes, huge voracious mosquitoes of the salt water marsh variety, have made life unbearable for the farmers and the farmers' live stock. They can't work their land during the day and they can get no rest at night because of the clouds of mosquitoes that swarm up from the L'Outre Creek bottoms into which more and more salt water is discharged as the field becomes more and more depleted.

The situation has not developed suddenly but has been growing slowly for the past two or three years, finally becoming so acute that recently the Arkansas Conservation Department called a conference of all interested parties at which a solution might be attempted. Operators, land owners and the health authorities and others attended, but no voice was heard from the royalty owners, therefore a possible or tentative solution arrived at is impossible for this solution depends upon whether the royalty owners agree to it and it is scarcely likely that they will.

So many wells in El Dorado are making such a large quantity of salt water with their oil that many operators would be satisfied to take them off production, at least temporarily. It is scarcely likely that royalty owners would be enthusiastic over seeing this income stopped. The only other alternative has been suggested, which is that better drainage be provided to expedite the flow of refuse from the five refineries in El Dorado into L'Outre Creek. Investigation has revealed that the cause of all the trouble is absent from the area draining into the smaller creek that carries this refuse from most of these plants, and the theory is that if sufficient waste oil and refuse could be gotten into L'Outre Creek bottoms the mosquitoes couldn't breed.

NEW BOOK ON DISTILLATION

The second edition of "The Elements of Fractional Distillation" has been completed by C. S. Robinson of the chemical engineering department of the Massachusetts Institute of Technology. It covers all common modern problems incident to the design of distilling equipment. The author briefly discusses the application of the phase rule, the gas laws and the laws of solutions and applies these to the problems involved in the design of refinery distilling equipment, including towers, stills and condensers. McGraw-Hill Book Co., Inc., 370 Seventh Avenue, New York, for $3.

Title to 4,000 Acres In Yates Pool, Texas, Questioned in Suit

SAN ANGELO, Tex., May 2.—Proposing to "settle for all time" the question of titles to 4,000 acres of land in the heart of the Yates oil pool in eastern Pecos County, R. B. Whiteside of Duluth, Minn., has filed suit against every leasing company and royalty holder on the acres.

The territory now has 65 producing wells and its estimated value is $10,000,000.

Suit was filed at Fort Stockton in the Pecos County district court.

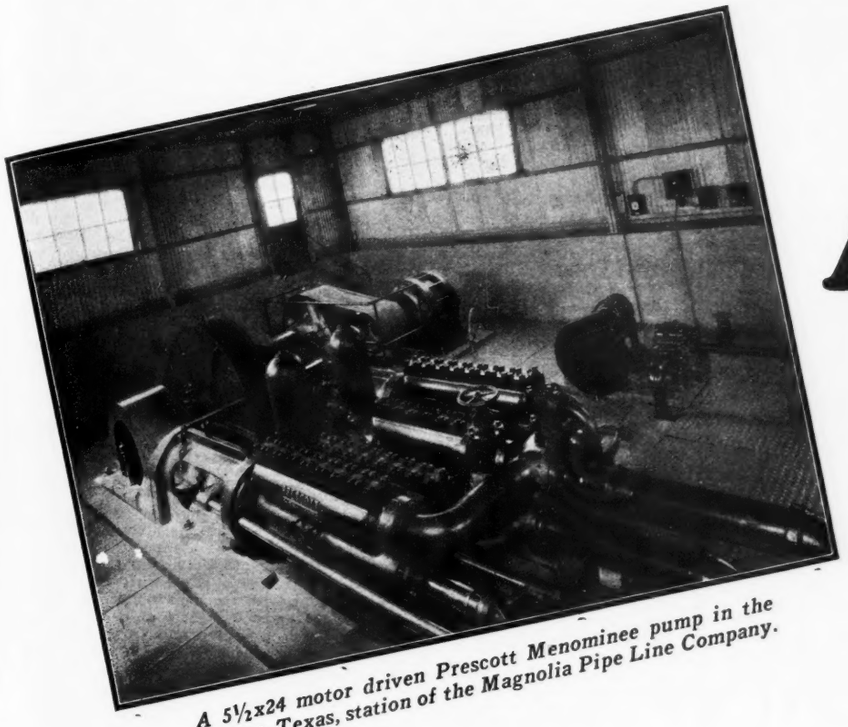
Whiteside is president of the Douglas Oil Co. of Tulsa, and besides his oil interests owns extensive iron and lumber interests. With his son and their company, Whiteside owns undisputed claim to 12,000 royalty acres in the pool. their joint interest in returns from 375 wells in the entire pool second only to that of Mid-Kansas Oil & Gas and Transcontinental Oil Co., jointly. They were original purchasers of leases and royalties before the discovery well was drilled in October 26, 1926.

Whiteside sets out that since his title to 80 per cent of the 20,000-acre Smith ranch is being questioned, he is going to bring all title holders in the suit and settle boundaries. His petition reverts to the original survey made in 1883, and attempts to show all of block 194, G.C. &S.F.R.R. Co. Survey, should be moved east to take up Survey 34½, now owned by Ira G. Yates and containing 18 of the best wells in the field; the Yates scrip file, a long vacancy containing 30 wells. among them Mid-Kansas-Transcontinental's No. 30-A Yates, potentially the world's biggest gusher; the D. F. Robertson Survey, with two wells; and Sections 102, 107 and 108, with 17 wells.

Whiteside claims that in 1883 James D. Daugherty had scrips from the State of Texas entitling him to 50 sections for himself and 50 sections for schools of Texas, and to have the block surveyed. He came to Pecos County, found an irregular tract about 10 miles long by 12 miles wide, and engaged L. W. Durrell, now of San Antonio, then Pecos County deputy surveyor, to survey the land for him.

Whiteside contended that instead of going on the ground and making an actual survey, Durrell did the work on maps, laying out 100 sections, but that later surveys showed these sections to be over 2,500 acres short of comprising 64,000. This led to the perfecting of vacancies, which have caused the most amazing series of litigations of their kind in Texas history.

Prescott Menominee Pumps are ALWAYS ON THE JOB



A 5½x24 motor driven Prescott Menominee pump in the Pampa, Texas, station of the Magnolia Pipe Line Company.

DAY in and day out, year in and year out, Prescott Menominee pumps are working — efficiently and economically. You'll find them everywhere. They are either electric motor or engine driven and operate at high efficiencies over a wide range of operation. Changes in pressure or capacity requirements do not cause any material lowering of mechanical efficiency.

Practical men prefer Prescott Menominee pumps because of their great economy. Actual performance records show the low power requirements of these pumps and the almost negligible maintenance costs. Long service has proven their extreme reliability and general excellence for pipe line use.

We will appreciate the opportunity of sending you detailed performance data, or any information which will help you meet your pumping requirements.

The Prescott Company

Menominee, Michigan, U. S. A.

Pumps for deep mines ~ Pumps for pipe lines

O&GJ 5-8 Gray

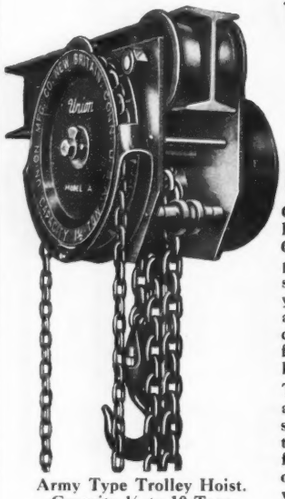
The *double-life* oil field hoist—

UNION

ROLLER BEARING SPUR GEARED and ARMY TYPE TROLLEY

All Steel

HOISTS



Army Type Trolley Hoist. Capacity ½ to 10 Tons

Our exclusive feature of a REVERSIBLE LOAD CHAIN SPROCKET places these hoists in a service-giving class beyond all previous standards. Other features of design give users entire freedom from ordinary hoist troubles.

Try a UNION HOIST and see what real hoist service means. Guaranteed against imperfections for one year under 50% overload. Order through your dealer or write us for full details.

Spur Gear ½ to 20 Tons

MANUFACTURER OF UNION LATHE CHUCKS

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Main Office and Factory—New Britain, Conn.

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On the Job— ALWAYS

The Chaplin-Fulton Automatic Cut-Off is on the job at all times. It automatically closes the ports of the regulator valve. The valves must be opened by hand before the gas flow resumes.

There is no chance for dangerous explosions, because even though the diaphragm of the regulator should burst, this cut-off would stop the flow of gas immediately.

The Chaplin-Fulton Manufacturing Co.

28-40 Penn Ave. Pittsburgh, Pa.

CF

More than 40 years of experience in controlling gas pressure has taught us how to make this device dependable in its operation.

Organized 1884—Oldest builders of regulators in the country. Built in all sizes from 1 to 24 inches; for all services 1 oz. up to 2,000 lbs. pressure per square inch.

DEMAND FOR GAS IS FORECAST ACCURATELY

(Continued from Page 142)

up to the establisnment of a measure of pure domestic requirement on a per capita basis. To secure the necessary unit to permit the expressing of this value as an equation, the domestic rate sale over a five-year period is again handled somewhat differently in order to reach the heat requirement on a per capita basis. This analysis of sales will be found in Exhibit 3 and for purely domestic use develops a value of 3.3 feet per degree day per capita for space heat only.

Setting Up Equation

With this value we may now set up an equation to be used in calculating possible domestic sales (exclusive of commercial paying domestic rate) on a per capita basis and for a given area:

Population [6,780 ÷ (degree day deficiency) 3.3] = annual domestic requirement in cubic feet of 1,000 B.t.u. gas.

As a companion of this equation it will be desirable, if possible, to establish a means of calculating the saturated maximum day demand for domestic use only, and under conditions of continuous heating during low temperatures. To do this we will need a per capita per day value for cooking and hot water. Heretofore 23,320 feet has been used as the requirement per meter for the seven months November to May inclusive. Also a population to meter ratio of 5.2. Therefore:

$$\frac{23{,}320}{212 \times 5.2} = \text{per capita per day during winter months} = 21 \text{ feet for cooking and hot water.}$$

Available also are detailed records of four days of maximum demand during the past three years. This data is given in Exhibit 4. Analysis of these maximum day sales gives a value of 3 feet per degree day per capita for space heat only under conditions of continuous heating, and where gas used for cooking also materially assists in supplying required heat. For domestic sales only, and not including such gas as may be used for commercial and industrial purposes but paying the domestic rate, we may write the equation:

Maximum day domestic demand = population [21 ÷ (D.D.D.) 3].

NATURAL GAS OUTPUT AMERICA'S NEW GIANT

(Continued from Page 138)

measure up to its opportunities. Not the least important of these details is old-fashioned salesmanship. Happily, the gas business generally has been getting to be really sales-conscious in the last 10 or 12 years. Its awakening is reflected in the increased output record to which I have referred.

Sales promotion, thus consciously organized and pushed, also yields indirect gains of some value. It tends to humanize the business or, more accurately, the public conception of the business, which is the important consideration. Other things being equal, a business that is out on the street selling its product in stiff competition, instead of sitting back in a come-and-get-it attitude, is bound to be on better terms with the public; it becomes more like "one of us folks" and less like an "octopus." And that is an important gain for another reason: It tends to keep ourselves and the public reminded that ours is a keenly competitive business, in spite of its being called a "monopoly" business.

Since we are all affected by catch words, the common interpretation of the word "monopoly" no doubt colors public attitude toward mergers, holding companies and other modern phases of large scale operations. And that is of some consequence in view of all the talk now going on about mergers and holding companies, in connection with discussion of regulation.

Matter of Special Concern

It would seem to be of special concern to the natural gas business, with its pipe line projects traversing many state boundaries. But if there is a problem in these merger-holding company-regulation circumstances—and the existence of any real problem may be doubted—it can scarcely be solved by geographic changes in regulatory jurisdiction—by shifting jurisdiction from the states to Federal authorities in Washington.

Whenever large scale operation and merger will increase efficiency and better service, it is bound to come as an economic certainty. But resistance to its coming, arising from misunderstanding, can be lessened by having the logic and merit of it better understood. And here, again, the value of intelligently co-operative association work comes in.

What the association has done for manufactured gas, it can easily duplicate, and probably surpass, for "America's newest giant," because it has the experience of a busy and fruitful life to draw upon. But the association is no miracle worker. It gets results only by the co-operation and support of its members. In other words, to all of us, as individuals or companies, it offers opportunity. Utilization of the opportunity is up to ourselves.

SELLING APPLIANCES ONE WAY OF INCREASING LOAD

(Continued from Page 132)

part, offset the house heating peak. House cooling has already been subject to discussion in committee meetings of this organization and at the present time our company is experimenting along this line with the hope that it may be able to assist in transforming house cooling from a dream to an actuality. From studies made to date it is impossible to predict the ultimate limits of this possible load or just how broad a field it will have in practical commercial application. However, we do have this factor to consider in its favor: The American people are always willing to accept and pay for any new modern trends leading to improved living conditions.

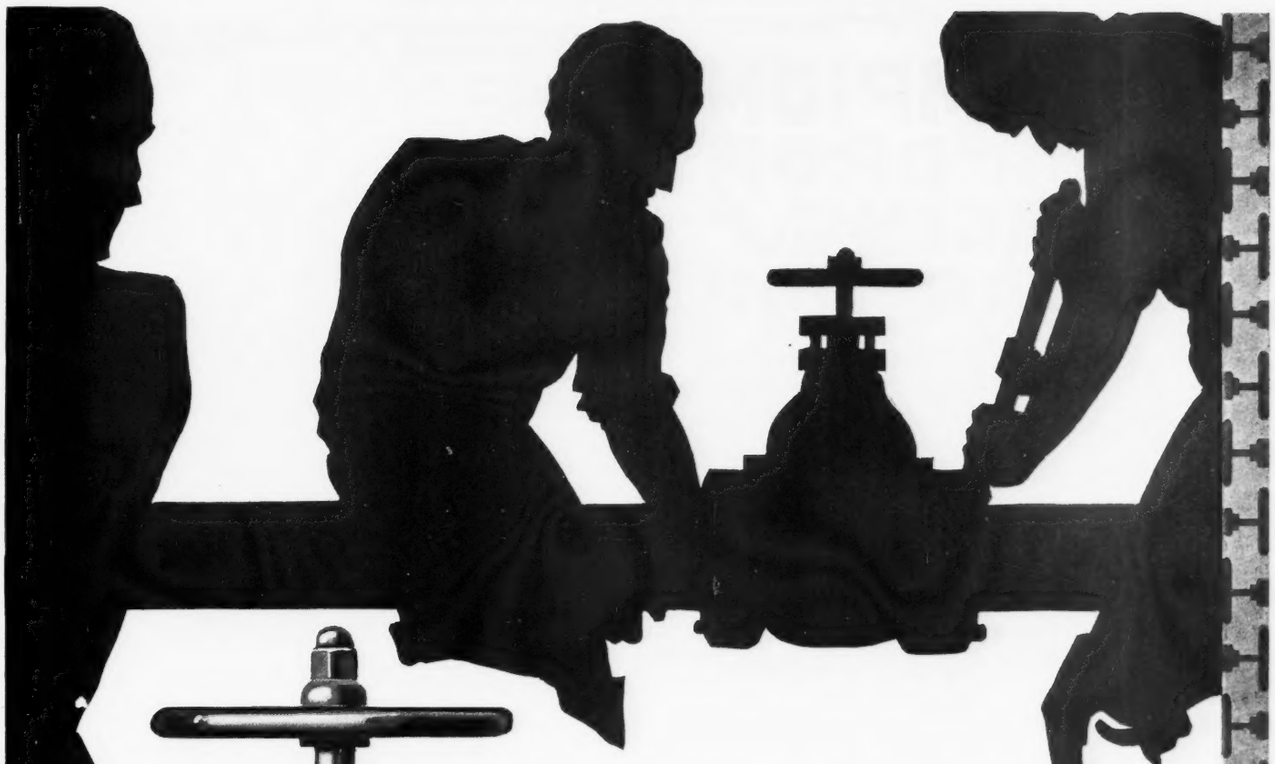
We recognize this use of gas as our opportunity to not only increase domestic consumption but to offset the terrific peak of four and a half months' heating load. You may well appreciate that we take house cooling seriously when it is explained that our average yearly consumption per consumer is 100,000 cubic feet and that 70 per cent of this load is delivered within this four and a half month period. Filling in the valley representing summer load conditions, wholly or in part, by means of gas refrigeration and house cooling, is recognized by us as our opportunity to increase domestic load and stabilize our business.

Service Keeps Friends

It has been said that "merchandising activities make friends and service keeps them." Today we are concerned not only with volume domestic consumers, but with satisfied consumers. We try to help the public accept the gas company as a unit of hard working individuals rather than a cold blooded corporational institution.

Are we rendering service to our customer in the mode of today? Picture, if you will, the old-time gas fitter with his ramshackle truck, mud spattered and unpainted, several joints of pipe wired on at odd angles, with loose fittings, tools and a loose meter or two thrown into the rack, as the whim of a finished job might dictate, clattering down the street to answer what he has in all probability classified in his own mind as the next unjust complaint. Arriving, he strolls across the lawn toward the rear door where he announces himself in a loud voice, "gas man!"

The lady of the house whose range needs adjustment looks out of the door to behold a vision of an unshaved man in greasy overall and freshly muddied boots. She immediately wishes that she had not called the gas company for assistance. However, she permits this gas company public relation representative to enter to do his job as he sees fit, praying that in the course of the appliance adjustment he will not find it necessary to go into



When?

The inevitable future replacement job—how far off is it? That's the one big consideration in choosing a valve.

Thousands of Ludlow Valves are in use on Natural Gas and Oil lines. Many in active service over twenty-five years are still giving satisfactory service.

The LUDLOW VALVE Manufacturing Co.

TRADE MARK

TROY N.Y.

3508-A

CHAMPION DROP FORGINGS

The Break-Down Habit

Microscopic examination insures flaw-free steel for every Champion Drop Forging.

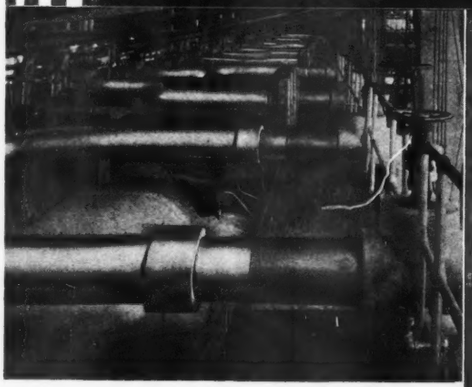
Pumps with the break-down habit wreck production schedules: run costs up out of sight.

Cure that habit by making sure every vital, load-carrying part is a drop-forging. Then you can count on continuous profit-making operation.

For drop-forgings have more strength—more lastingness — hammered into them.

THE CHAMPION MACHINE & FORGING CO.
3695 East 78th Street,
CLEVELAND, OHIO

PIPING by Power Piping
FOR EVERY OIL FIELD NEED



For years this company has helped the most prominent refineries to meet individual piping problems effectively and economically. *Put your piping problems up to Power Piping Co., Pittsburgh, Pa.*

the front part of the house, there to leave the gas company's calling card in the form of a muddy track.

Another Picture

We realize that conditions such as these are of an age gone by, but have we progressed to a point where we can paint a picture such as this: A service man answering a corresponding complaint, arrives at the customer's premises armed with full advance data concerning the customer's complaint, which has been relayed to him by a centralized service bureau at the home office. The customer opens the door to a man of at least high school education, dressed in neat business clothes or suitable uniform. She looks past him to see the company's service car, freshly painted and polished, standing at the curb. She is willing to discuss her complaint with this man, realizing that she will receive an intelligent answer to her question, whether that question be asked concerning the particular complaint or other company matters.

When this man has finished his job the chances are exceedingly favorable that the customer will be left with a kindly feeling toward her appliance and the company as a whole. This type of service builds the liability of a complaint into an asset of satisfaction and insures the continued use of the customer's appliances and opens the door for future placements.

From the foregoing it is apparent that we must continue actively to merchandise the accepted standard appliances, stimulate the sale of gas refrigeration, develop gas house cooling, and render a modern type of service in order to increase and stabilize domestic gas load.

SIPHON AS SOLUTION OF WATER PROBLEM

(Continued from Page 130)

oil, or gasoline, or a combination of these liquids. We have had wells to drown out with 1,100 pounds pressure on the sand, the liquid rising in the casing to such a great height that it could not be blown out before siphons were installed.

Method of Operation

Our method of operation is to produce the gas and liquid through the siphon line into the well line where the liquid is trapped off in a regular well line drip. With this method of operation it is not necessary to design the siphon for a very low gas-water ratio. We are therefore able to design the siphon so that it will work on a lower differential of pressures. Our jet system tends to vaporize the liquid, thereby decreasing its density and making it easier to raise. With this method of operation there is no waste of gas.

When a siphon is installed we determine the frequency and length of time necessary for turning it in line to keep the liquid from heading up the well.

One advantage of the use of 1-inch siphon lines is that the liquid can be handled along with a small production of gas, which is very advantageous at times when the gas is not needed. When additional production is desired it may be obtained from the casinghead connection which has been provided for that purpose.

Production Record

Figure 1 shows the production record of a gas well for 19 months previous and 19 months after a siphon was installed. The crosshatched area represents a production of 35,503,000 feet before a siphon was installed and 67,199,000 feet in the same length of time after the installation, and at a later period in the life of the well. The pressure variation before was from 105 to 20 pounds. At the time a siphon was installed the shut-in pressure was 70 pounds. After that time the well has shown a normal steady decline. By drawing the decline curve back to the beginning of the chart we may readily see that more gas was wasted than was produced in the period before the siphon installation. The former method of operation was to blow the well through 2-inch tubing at regular intervals to remove the water. During the latter period shown on the chart, no gas has been wasted.

Figure 2 shows the siphon installation, surface connections, and well line drip.

GAS HAS AN ACTIVE OUTPUT IN CALIFORNIA

(Continued from Page 134)

a mixture of about 17 per cent butane. This mixture which will give a gas of approximately 560 B.t.u. per cubic foot will be piped to the consumers through a distribution system similar to any other gas company.

The public utilities, major oil companies, a large percentage of the small oil companies and the State of California have been greatly interested in the conservation of natural gas in the past year. Efforts along these lines have met with some success and it is expected that more progress will be made during this year and the years to follow.

The outstanding event was the passage of the Natural Gas Conservation Law by the winter session of the California State Legislature in 1928 and signed by Governor Young in May, 1929. This law prohibits an unreasonable waste of natural gas by limiting this waste to a certain volume of gas for each barrel of oil produced.

Sales Departments Active

The sales departments of all the gas companies in the State have been exceedingly active in their efforts to increase the consumption of gas, especially along industrial lines.

In San Francisco the Pacific Gas & Electric Co. has set up an exhibit of various types of burners, ovens, regulators, etc., used in various industries. A great many hotel, restaurant and household appliances are also on exhibition, including furnaces for homes and coal furnaces which have been converted to use natural gas. A similar exhibit on a larger scale has been set up in Los Angeles. It is known as the Natural Gas Bureau, being supported by three companies, the Los Angeles Gas & Electric Co., the Southern Counties Gas Co. and the Southern California Gas Co. A whole building has been leased. All the apparatus is connected to the mains forming a permanent working exhibit.

One of the most interesting of the new uses of natural gas developed during the past year was the drying of kelp or seaweed gathered off the shores of California. This weed has a high natural iodine content and when mixed with poultry and cattle feed in the proportion of about 10 per cent not only develops larger and stronger birds and cattle but the quality and quantity of the dairy products obtained are increased.

Great publicity has been given natural gas in California through advertisements in magazines, newspapers and by means of bill boards. The Pacific Gas & Electric Co. even put on a series of advertisements in nationally circulated magazines in order to induce industries to move to or establish additional plants in the territory served by it.

Present known sources of natural gas indicate a supply sufficient to serve all gas requirements of the State of California for a great many years to come. This economical fuel and the low cost of electrical energy will materially aid in increasing the industrial activities of this great commonwealth.

SATURATING DRY NATURAL GAS WITH OTHER VAPORS

(Continued from Page 134)

pressure mains, at a pressure of 6 inches of water. Part of the gas leaves the plant through this intermediate pressure system, and the remainder through the station holders direct to the low pressure system.

Therefore, the saturation of the gas delivered to the intermediate pressure system is accomplished by the injection of steam (from an automatically operated gas-fired steam boiler) at the point at the gas plant where the gas enters the in

How they maintain M.R.T.

... at the Gypsy Oil Co.

Close-up of Robert Bosch Super-Energy Magneto installation in Gypsy Oil Co. plant shown at upper left.

THE scene is the Payne Flowing Plant of the Gypsy Oil Co., in Earlsboro, Okla. The sixteen 90 H. P. Superior engines in this plant never fall down on their record of M. R. T.—Maximum Running Time. For all sixteen of them are equipped with Robert Bosch Super-Energy Magnetos.

In all departments of the production, transportation and refining divisions of the oil business you will find Robert Bosch Magnetos on duty. They are delivering dependable ignition to tiny single cylinder engines as well as engines of many B.H.P. They are delivering dependable ignition to compressor plants, drilling outfits and motor trucks. In other words, WHEREVER MAGNETOS MUST NOT FAIL... there you will find Robert Bosch Super-Energy Magnetos.

The Robert Bosch Magneto is the ideal magneto for field work. It is designed to shed water like a duck; dirt, dust and mud can't get anywhere near the working parts. And if quick attention is needed, conveniently located service stations can fix you up fast.

If you are interested in increasing the efficiency of your ignition equipment mail coupon today for a free copy of "Ignition Briefly Described." It tells the whole story in a way you will find interesting and useful.

All Robert Bosch Products bear the full name "ROBERT BOSCH" and this trademark of Robert Bosch A.-G. . . .

ROBERT BOSCH MAGNETO CO., INC.
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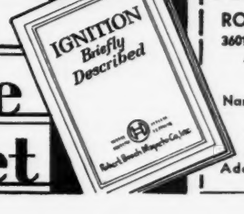
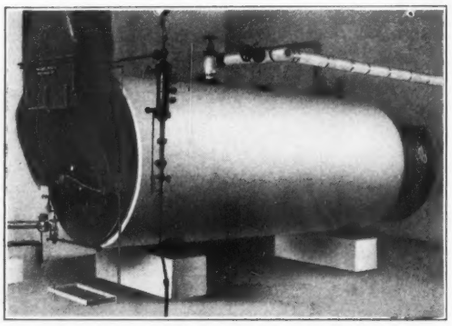
Robert Bosch Super-Energy Magneto

Send for this free booklet



ROBERT BOSCH MAGNETO CO., INC.
3601E Queens Boulevard, Long Island City, New York
"Please send me a free copy of "Ignition Briefly Described.

Name .....
Company .....
Address .....



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Designed especially for
OIL OR GAS FIRING

The best boiler for Drilling Service, Refinery and Pumping Stations.

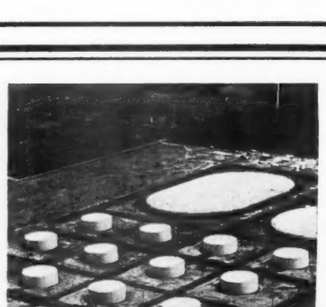
Made for high pressures.

Also manufacturers of
BUBBLE TOWERS HEAVY STILLS
COOLING BOXES
(All kinds of heavy plate work, *Welded or Riveted*)

THE HEDGES-WALSH-WEIDNER CO.

Home Office: Chattanooga, Tenn.
Eastern Office: 200 Madison Ave., New York

Clean Regularly —repaint less



STORAGE tanks can be kept clean and bright, and will need repainting much less frequently, if periodically cleaned the Oakite way.

An Oakite material in a water solution, sprayed on, or applied with brushes, speedily removes all dirt, grime, and oily deposits, leaving surfaces amazingly fresh and new-looking. No fumes . . . no danger . . . no fire hazard . . . and very little effort required.

Oakite materials are equally economical and effective for many other cleaning jobs. Ask us to send our nearest Service Man to explain. No obligation.

Oakite Service Men, cleaning specialists, are located in the leading industrial centers of the U. S. and Canada.

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OAKITE
TRADE MARK REG. U.S. PAT. OFF.
Industrial Cleaning Materials and Methods

termediate pressure system. The amount of steam injected is automatically controlled, so that the gas is 100 per cent saturated at a temperature slightly higher than the average main temperature. The temperature to which the gas is raised is manually controlled and is changed about four times a year. In addition, at each district regulating station a spray of oil is injected directly in the path of gas on the low-pressure side of the regulator, which is intended to compensate for the loss in saturation due to the reduction in pressure across the regulator.

Through System of Wooden Trays

The gas, after passing the oil spray, runs through a system of wooden trays to cause the gas to take up as much oil vapor as possible. The gas leaving the station holders already carries a high percentage of saturation, but in addition a finely atmoized spray of oil is directed into the main on the outlet of the station governor. Thus, all of the gas entering the low-pressure system is thoroughly saturated with water and oil vapors.

This fives a brief story of our present set up, and at this point I would like to offer the following results which we have obtained:

All of the drips which were pumped previous to the conversion are being pumped now, as well as some drips which were never pumped before.

Saturation readings are being regularly taken by the wet and dry bulb sychrometer at various points about the city, and an average of 75 to 85 per cent saturation is being found.

Unaccounted for gas on the low pressure system shows no increase (on the basis of losses per mile of 3-inch equivalent) since the introduction of natural gas during August, 1928.

The total capital investment in equipment for saturating the gas is approximately $18,000.

The total operating cost has been about $7,500 per year.

An average of 1.5 pounds steam per 1,000,000 feet and 3.3 gallons of oil per 1,000,000 feet is required for saturation.

The steam boilers consume 2.5 feet of gas to saturate 1,000 feet of gas.

CENTRAL WEST FIELDS

(Continued from Page 86)

the past week, although some new work is starting and in the old Trenton Rock area in the northeastern section a number of old pumpers have recently been abandoned. In this area there was a dry hole drilled by G. S. Lacknett and others on the Mrs. S. S. Egley, Section 3, Jefferson Township, Adams County.

In Bear Creek Township, Jay County, Spencer & Pontius abandoned Nos. 2 and 8 T. W. Shimp, Nos. 5, 6 and 7 William Michaels and No. 16 J. W. Rosenborough in Section 28 and Nos. 1, 2 and 5 E. T. Heffner, Section 21, same township.

In Jefferson Township, Grant County, at one time one of the great producing counties of the State, Jacob Wides has abandoned Nos. 4, 5, 6, 7, 8, 9, 10, 11 and 12 A. and E. Anderson farm, Section 28.

In southwestern Indiana, in the Princeton area, the Texana Oil Co. is drilling a second test on the S. McCullough, Section 10, Barton Township, Gibson County. Big Four Oil & Gas Co. is drilling No. 3 C. T. Sloan, Section 18, Washington Township, same county.

C. C. Taliaferro, Jr., has abandoned No. 1 Della Kime, Location 12, Clay Township, Pike County, and is drilling No. 6, same lease. William Bell and others are drilling No. 3 Fred Lindsay, Section 31, and the Mahutska Oil Co. is drilling No. 4 Ford & Hill, same section. H. R. Clark is drilling No. 2 on the J. M. Thomas, Section 19, Washington Township. In Logan Township, H. C. Darby and others are drilling No. 4 G. Stewart, Section 23, and P. C. Andrews is drilling No. 10 A. Atkinson, same section.

ILLINOIS

The best completion reported from Illinois was found in the Dupo Field in Sugar Loaf Township, St. Clair County, where the Sugar Loaf Oil Co.'s No. 5 in the SE cor. of the William Breuer farm, SE, Section 28, showed an initial production of 70 bbls. from the Trenton lime at 472 to 512 feet. Majestic Oil Co. abandoned No. 2 H. E. McDaniel, Section 21, same township. Ohio Oil Co. is drilling Nos. 6 and 7 Phillip Frye, Section 34, same township. Hugo and others are drilling No. 1 Stein, and Hageman & Weldon are drilling No. 2 Pauline Eckert, Section 34. Mitchert and others are drilling on the East St. Louis Boat Club property on Arsenal Island in the Mississippi River.

Cain & Pollock are drilling on the Dave Patton, Location 32, Washington County.

In the old Illinois Field in Crawford County, the W. C. Kennedy Co.'s No. 9 James Murphy, Section 8, Oblong Township, pumped but 3 bbls. initial. Mattox & McColpin's test on the William Conrad, Section 21, Montgomery Township, pumped 2 bbls. Mark U. Weber drilled a dry hole in the SE cor. of the John Calvert, SW, Section 31, Licking Township. In Prairie Township the O. R. Oil & Gas Co. found a duster 200 feet from the north line and 600 from the west line of the M. Williams, SE, Section 2, at 1,002 feet. One-Sixth Oil Co. is drilling on the M. Barlow, Section 36, same township.

Brown and others are drilling on the R. C. Gillespie farm in Dennison Township, Lawrence County. McColpin & Brooks are drilling north of the old Westfield-Casey Field on the J. H. Handley, Section 34, Embarras Township, Edgar County.

Some new work is under way in the Allendale Field of Wabash Township, Wabash County. Robinson Oil Co.'s test, 1,100 feet from the north line and 200 from the west line of the A. Schaffer, NE, Section 15, produced an initial of 25 bbls. from 1,471 to 1,500 feet, and same company's test, 1,400 feet from the north line and 200 from the east line of the Hattie E. Robinson farm, NE, same section, pumped 10 bbls. from 1,457-76 feet, and No. 2 has been started on this lease. Ohio Oil Co. is drilling No. 4 W. J. Shick, Section 5. J. S. Young, Jr., and others are drilling No. 10 Collison heirs, Section 13. Ridge Farm Oil Co. is drilling No. 9 W. M. Price, Section 14, and W. C. McBride, Inc., is drilling No. 9, J. H. Cisil, Section 24, all in Wabash Township.

KENTUCKY-TENNESSEE

(Continued from Page 90)

Stewart, Buford Pool, came in at close around 40 bbls. initial; No. 9 showed 40 bbls., while No. 10 was reported at 250 bbls. and No. 11 was dry.

White & Vickers report a dry hole on the Helton, in the Friendship Church Pool, south of Magon Station.

Fred Weir and others' No. 13 well, 1,000 feet from the north line and 900 feet from the west line of the Norris heirs, in the Deanfield area, is reported at 48 bbls. the first 24 hours.

Union Oil Co.'s second test, 600 feet from the south line and 400 from the west line of the Allie Evans farm, about 3 miles southeast of Whitesville, produced an initial of 8 bbls.

Rex-Pyramid Oil Co. got a dry hole in No. 5 on the S. C. Rhodes farm, in northern Ohio County.

Daviess County Wells

Daviess County is not making many completions at this time, although quite a number are under way. Watts & Vickers' No. 1, on the Schultz farm, is reported good for 25 bbls. from the Barlow sand which has proved so long lived in this part of Kentucky.

Creek Drilling Co.'s No. 4 on the J. W. Howard 25 acres produced 10 bbls. initially, while D. J. White and others got a dry hole on the W. N. Howard farm, three-quarters of a mile south of Whitesville.

McLean County Wells

Cameron, Thompson's No. 1 on the Ed Sohmers lease near Calhoun, in McLean County, along Grindstone Hill, topped the sand at 1,080 feet and went in 30 feet and not being satisfied with the showing went another 20 feet to a total

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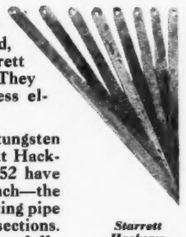

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depth of 1,130 feet, getting what is showing for a 25-bbl. producer.

The Ohio Oil Co.'s Nos. 5, 6 and 7 on the McManama farm are reported at 30, 25 and 30 bbls., respectively.

Henderson County Wells

The Niagara Field of Henderson County is an active area at this time and shows few dry holes, the wells being average producers at depths as comparatively shallow as 700 feet. Brenner & Adams hit a dry spot in their test on the Judson Wilson farm in the vicinity of Niagara. Thomas Wittmer's No. 4 C. M. Gish, one-half mile west of Niagara, produced an initial of 35 bbls. Welfare Oil Co.'s second test on the Arche Hatchett, same field, produced but 8 bbls. the first 24 hours. Niagara Oil & Gas Co.'s No. 2 on the R. C. Duncan farm produced 8 bbls. initially.

Wittmer Oil & Gas Co.'s No. 4 John B. Cosby farm produced an initial of only 8 bbls. John B. Lyddane's No. 4 on the C. M. Gish 200 acres, Niagara Field, showed 35 bbls. the first 24 hours.

Eastern Kentucky Wells

A few small pumpers are reported from the fields of eastern Kentucky, where little work is being done at this time. In Wayne County, District 13, Frank & Harmon's No. 1 John Bartram pumped but 1 bbl., and Abe Denney and others' No. 1 I. G. Guffy also produced but 1 bbl.

In McCreary County, District 3, the Pigeon Rock Oil Co.'s No. 14 on the Stearns Coal & Lumber Co. land produced 8 bbls. and Bain & Hogue's No. 1 Eli Phipps produced 6 bbls.

In Wolfe County, District 20, Amp Burnett's second test on the J. P. Bush No. 2 farm pumped 1 bbl., and Townsend heirs' No. 1 L. T. Girard and others developed into a duster.

In the Weir Sand Field of Lawrence-Johnson Counties, the Noble Oil Co. completed Nos. 1, 2 and 3 Dan Davis farm, District 30, with a production of 4 bbls. each, and Nos. 1 and 2 S. T. Colvin farm, 2 bbls. each.

In Johnson-Magoffin Counties, the Magoffin Oil Corp.'s No. 4 on the Williams heirs, District 27, pumped but 1 bbl. initial. No. 5, same farm, under way.

Four dry holes reported from Ohio County, being S. M. Sirman and others' No. 1 Jess Mattingley, at 550 feet; H. Ford and others' No. 1 Tilda Hilton, at 694 feet; Hupp & Duff's No. 1 C. P. Brown and same parties' No. 1 Tom Fuqua, at 695 and 700 feet.

SIGNIFICANCE OF NEW OIL WELL IN CUBA

(Continued from Page 114)

tical and technical experience, and in most cases the required capital is already provided. The Atlantic Refining Co. has had its geologists in the Cuban Field for the past 10 months and they will remain for six months longer continuing their investigations, extending from the Province of Pinar del Rio, on the extreme western sector to the Province of Oriente, which is the eastern state—a distance of 750 miles. W. J. Conners, the Buffalo publisher, has denounced 25,000 acres of land for oil exploration in Matanzas Province, near Cardenas and has a drilling crew in the field. A new corporation has been organized recently with a capital of $2,000,000 under the name of General Petroleum Corp. of Cuba, which has recently acquired thousands of acres, by purchase or denouncement in widely separated localities, and is expecting the early arrival of two drilling rigs from a Texas port, together with drilling crews and casing. They have two geologists on the ground.

In Western Province

Pinar del Rio, Cuba's western province, offers exceptionally enticing opportunities for petroleum exploration. In this province there are tens of thousands of acres of denounced oil leases, most of which were made decades ago, and not a single one of which has ever been tested with the drill. There are great domal structures completely surrounded with a lime formation of Cretaceous and Sec-

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PLACED end to end, all the men in the Lone Star territory who are sleeping later than they used to do would reach from the Red River to a sand trap on a far-away golf course. And they sleep better all night!

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Likewise in his factory, store, refinery or office, he has a spotless automatic heat for every purpose. No shopping bother, no storage, no handling. He has that particular freedom and peace-of-mind which men in natural gas towns enjoy.

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His gas-fired ice box runs with the same perfection and economy that a hotel refrigerating system does.

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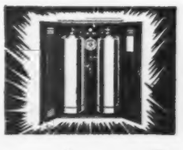
Not to be cramped by main line boundaries, we are now supplying automatic heat anywhere . . . STARGAS, which is Lone Star gas compressed in steel cylinders. For Farms, Ranches, Schools and Camps.



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Each Stargas cylinder contains 90 pounds of compressed natural gas, enough to do the average family's cooking for two months.

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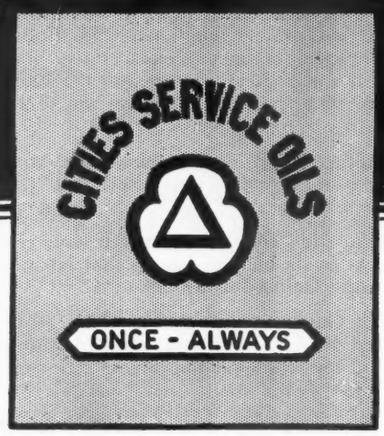

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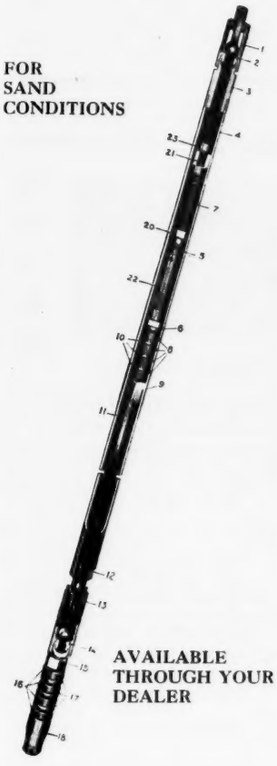

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ondary series, with every possible geologic and structural feature, dip and inclination of strata satisfactory—greatly resembling the great Maracaibo Basin of Venezuela, or many of the domal structures of Texas and Wyoming, with this difference in the latter two named, that here we find most abundant bituminous substances flanking these potential areas, asphalt, chapopote, gilsonite and other hydrocarbons in amazing quantity and quality. There are great seepages of every well known hydrocarbon here, ranging from the heaviest liquid chapopote, up through the natural mineral oils, including lubricating crudes, to water white gas-naphtha and natural gases to be found on the island.

Liquid chapopote, which resembles Doheny's discovery on the east coast of Mexico, which led to the opening of that vast oil field, is found in abundance along a 200-mile zone following the north side of the great batholith. One well was dug with pick and shovel, measuring 5 feet by 10 feet in size and 110 feet in depth, by early Spanish operators. This well is standing full of chapopote today. It is thought that a ready market should be found for this material, as it is of the highest quality and an immense quantity is available, and as a paint, laquer and protective covering for all metals, structural steel, roofs, etc., it possesses no known equal.

Even a reconnaissance survey is sufficient to convince any technical operator that Cuba possesses more genuine earmarks of those prerequisite qualifications to becoming a petrolific area than in most other localities where extensive drilling has been done and productive areas opened. The price paid for crude is $4.25 per barrel. Another feature which should not be disregarded at this time, is the present opportunity of denouncing these lands in great tracts under the most lenient laws ever known, and with a good government. Any area, not already denounced, or to which title had formerly been granted to an applicant by the Cuban government, may be acquired and a perpetual title obtained from the government, upon which there is no rental, royalty, tax or any sort of drilling obligation exacted thereon, for mineral, oil or gas rights, and the total cost going to the Cuban government for civil survey, which must be official, filing fees, notary charges and all other costs will not exceed $2.50 per acre. From recent events it is believed Cuba is at last on her way to national petroleum independence.

EASTERN FIELDS

(Continued from Page 90)

South Penn Oil Co. is drilling to the lower sands No. 3 on the J. W. Starkey farm. In Church district the Troy Oil & Gas Co.'s test on the W. J. Troy farm is a 3-bbl. pumper in the Big Injun sand. In Cameron district, Marshall County, the Manufacturers Light & Heat Co. has a gasser in the Gordon sand on the Brice Howard heirs' farm.

In Central district, Doddridge County, J. D. Foley has a 5-bbl. pumper on the Cisco Dotson farm. In the same district Frank Finley and others have started to drill on the Eaton Cain farm. In the same district Lucas & Mahaney have started to drill on the Mary Montgomery farm.

In Geary district, Roane County, C C. Surface has completed his test on the Storts & Co. farm. It is a gasser in the Big Injun sand. In Reedy district, same county, the Hope Construction & Refining Co. has a very light pumper in the Berea grit at No. 1,442 on the L. Vandal farm.

In Sherman district, Calhoun County, L. P. Bickel's test on the J. G. West farm is a gasser in the Big Injun sand. In Lee district, Edward Smith & Co.'s second test on the Bess Renoods farm is a gasser in the same formation.

In Church district, Wetzel County, Cochran & Cochran have a light gasser on the E. J. Hoge farm. In Scott district, Boone County, the United Fuel Gas

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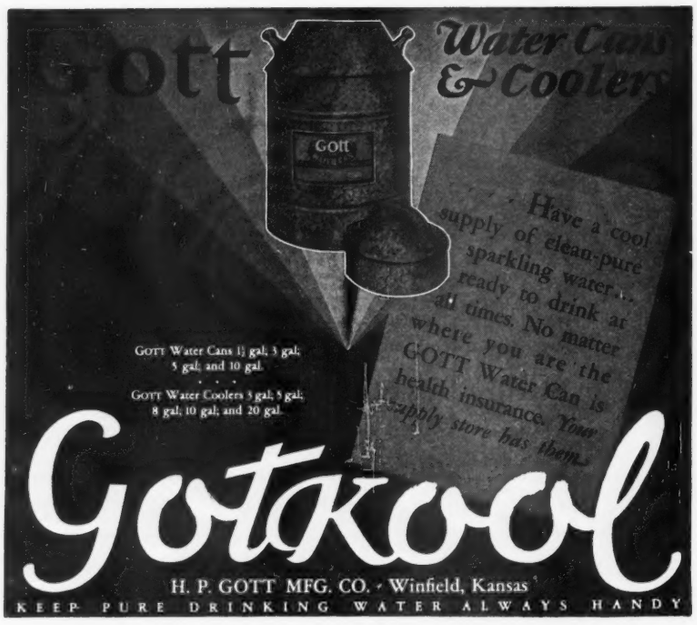
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This condition may become deeply entrenched if not treated at once. REECE'S TOE TREATMENT has been used with uniformly good results on the most stubborn cases. Price 50 cents.

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Co. has a gasser in the Berea grit at No. 4,077 on the Julian Hill & Co. farm.

Gilmer County

In Center district, Gilmer County, McCall & Co. are drilling on the E. B. Baker farm. In DeKalb district, C. V. Maloney & Co. have rigged up on the Craddock-Hardman farm. In the same district, P. G. Davis & Co. are drilling on the Alva J. Hardman farm. In the same district the Bowers Oil Co. is drilling on the E. V. Mitchell farm. In Central district, Doddridge County, the Pittsburgh & West Virginia Gas Co. is rigging up No. 4,988 on the Lewis Maxwell farm. In Clay district, Monongalia County, the National Supply Co. has started to drill on the Lemley Martin farm. In Ellsworth district, Tyler County, the Warden Drilling Co. has a rig up on the James Priest farm. In Carroll district, Lincoln County, the Allegheny Gas Co. has made a location on the Julis A. Reynolds farm.

On Anna Maria Creek, Sheridan district, Calhoun County, M. F. Crowley has the rig completed on the L. F. Hughes farm. On Sugar Creek Run of Reedy Creek, Reedy district, Roane County, the Heck Oil Co. has a rig up on the W. H. Enoch farm. In Grant district, Ritchie County, Herbert Flanaghan is drilling on the DeVaughn heirs' farm. In the same district Ralph Roberts is drilling on the A. J. Jenkins farm. In Troy district, Gilmer County, the Hope Natural Gas Co. is drilling on the Lydia S. Gillespie farm. In Center district, Calhoun County, the Hope Construction & Refining Co. is due in the sand on the L. D. Mace farm.

Monongalia County

In Clay district, Monongalia County, the Pedlar Run Oil Co. is due in the Gordon sand on the Lewis R. Hess farm. In the same district the Philadelphia Gas Co. is due in the Big Injun sand on the J. J. Moore farm. In Battelle district the Manufacturers Light & Heat Co. has a rig up on the H. E. Beans farm. In Clay district the Greensburg Gas Co. is due in the Gordon sand on the J. Marion Garlow farm. In Union district, Tyler County, Morgan Brothers are due in the Big Injun on the J. B. Dancer farm.

In Spencer district, Roane County, Paul Weekley and others are rigging up on the J. A. Epling farm. In Lee district, Calhoun County, F. F. McIntosh has started to drill on the John I. McCoy farm. In the same district the Gerwig Oil & Gas Co. is building a rig on the Everett Kerby farm. In Sheridan district the Hope Natural Gas Co. is drilling No. 2,754 on the E. E. Wilson farm.

SOUTHWEST PENNSYLVANIA

In Springfield Township, Greene County, Caldwell & Co. drilled deeper an old well and it is a gasser in the Stray sand. In Smith Township, Washington County, W. T. Dallmyer's test on the McPeak heirs' farm is a duster. In South Franklin Township, E. H. Tague has a 5-bbl. pumper in the Fifth sand on the George Bedillion farm. In the same township the Manufacturers Light & Heat Co. has a duster on the Vankirk heirs' farm. In the same township, Joseph Heidelman has a 2-bbl. pumper in the Dunkard sand on the George Bedillion farm.

In Springhill Township, Greene County, the Caseman Oil & Gas Co. has a rig up on the Margaret Caseman farm. In Center Township, George Drake & Co. have started to drill on the Dean Piatt farm. In Richhill Township the Natural Gas Co. of West Virginia has a rig up on the Mary Patterson farm.

MEXICAN OIL LAWS

MONTERREY, Mexico, May 7.—A commission will be appointed by the Department of Industry, Commerce and Labor, at the direction of President Rubio, to investigate the oil industry of Mexico. Principal purpose of the investigation will be to determine whether the existing petroleum laws should be amended. Depression of the oil industry and decline in production of Tampico area fields during last few years are largely due to oppressive laws, the president believes, according to persons who have conferred with him on the subject.

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The OIL and GAS JOURNAL
Tulsa, Okla.
CLASSIFIED WANTS

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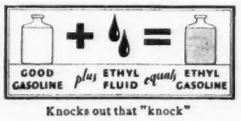

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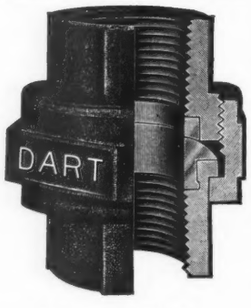

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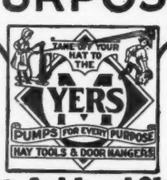

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IDECO ANNOUNCES ITS PURCHASE OF LEIDECKER

Announcement has just been made by Harry M. Runkle, president of the International Derrick & Equipment Co. of Columbus, Ohio, of the purchase of the Leidecker Tool Co. of Marietta, Ohio, which adds another important production link to the nation-wide group of manufacturing plants owned and operated by the International "Ideco" Co.

The Leidecker Tool Co. of Marietta is one of the largest and oldest drilling and fishing tool manufacturers in the oil industry. It was organized in 1891 by J. J. Leidecker and his associates, one of whom was W. B. Hayes, former oil man and mayor of Pittsburgh, and J. T. Braden, deceased, former first president of the Hope Natural Gas Co. and of the Oklahoma Natural Gas Co. The main plant is located at Marietta, Ohio, with branch stores and shops at Bartlesville, Okla., Basin and Casper, Wyo. In addition to the manufacture of a complete line of drilling and fishing tools for oil, gas and artesian wells, Leidecker also manufactures a complete line of drilling machines, boilers and fittings, steam drilling engines and other similar equipment. It is the intention of Ideco to continue the manufacture of this material and also to use the plant as an eastern source for its fast growing heavy oil well machinery business.

According to Mr. Runkle, the plant is to remain in Marietta and the present organization retained. For the present it will continue to operate under the name of the Leidecker Tool Co. but back of this organization will be placed the entire sales and distribution resources of the International "Ideco" Co.

Last year the International Derrick & Equipment Co. purchased the Boykin Machinery & Supply Co. of Beaumont, Tex., one of the largest manufacturers of rotary drilling machinery in the world. It now is building additions to the Boykin plant at Beaumont and constructing a new galvanizing and derrick plant in Houston. It also operates a large plant at Torrance, Calif., and maintains a modern foundry at Delaware, Ohio, in addition to its home office and plant in Columbus.

In addition to the manufacture of oil field equipment, the International Derrick & Equipment Co. is one of the largest manufacturers of standardized steel buildings in the United States. Other Ideco products are electrical transmision towers and substations; railway floodlight towers, signal masts, bridges and other structural equipment; steel hangars, airport and airway equipment, poster panels and bulletins, structural steel products, castings, commercial galvanizing and sherardizing.

The headquarters of the International Derrick & Equipment Co. are at Columbus, Ohio. Division offices are maintained at New York, Pittsburgh, Marietta, Wichita, Tulsa, Fort Worth, Houston, Beaumont, Shreveport and Los Angeles, with branches and stocks in every important oil and gas field. Foreign offices are maintained in London, England; Buenos Aires, Argentina, and Maracaibo, Venezuela. Export offices are located in New York, Columbus, Houston, Los Angeles, with representatives in most important foreign cities.

M. J. BASHARA DEAD

M. J. Bashara, old-time oil man of Wichita Falls, Tex., died at his home in that city. Mr. Bashara had not been active in the oil industry for two years due to ill health, but up to that time was interested in many areas in Texas as an independent operator and producer.

F. J. THORN DIES

Frost J. Thorn, Jr., oil scout for the Southern Crude Oil Purchasing Co., died at Fort Scott last month. He was a member of the National Oil Scouts Association of America, and previously had worked for The Texas Company.

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